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THIS WEEK'S NEWS

THE FOUNDING of a Modular Society—in which architects, engineers, builders and manufacturers may band together for development work in establishing a generally accepted module of co-ordination—was suggested by Mr. Hartland Thomas in a Bossom Gift Lecture last week. p. 900

SOME SUGGESTIONS for bringing down the cost of building were put forward by Mr. Alfred Bossom, M.P., at a luncheon on December 10. p. 913

COMPARED with last year, more than three times as many houses were being inspected and certified by the National House-Builders' Registration Council, said Mr. Andrew Stewart, chairman, at the Council's annual meeting on December 10. p. 913

IN A DEBATE on the Rent Restriction Acts on December 10, *Lord Morrison suggested that the House of Lords should form a working party to consider, as a matter of urgency, ways in which houses becoming uninhabitable through lack of repairs could be maintained, and to seek all-party agreement to the necessary legislation.* p. 919

AN AVERAGE overall increase of about 2*s.* 6*d. weekly in net rents of* 140,000 *dwellings built since* 1919 *is proposed by the L.C.C.* p. 920

MODULAR CO-ORDINATION

THAT the current Bossom Gift Lecture at the Royal Society of Arts should be on the subject of Cheaper Building is timely. Mr. Mark Hartland Thomas had obviously taken much trouble in the preparation of his lecture. He had studied a wide range of the more important systems of prefabrication in this country and had personally visited many of the firms concerned. The fact that must have impressed itself upon his listeners was the number of problems which were common to all the firms interviewed, whether they were dealing in timber, steel, aluminium or a union of many materials, and whether they were firms with large turnovers supplying buildings all over the world or were firms only conducting preliminary theoretical investigations. These common problems, in effect, all reduce to one problem —how best to incorporate standard mass-produced panels into buildings requiring a variety of plan and function.

An obvious and early decision in relation to this problem is the establishment of some form of "grid" representing the size of an easily handled panel and forming a basis upon which plans shall initially be prepared. The conception of grid planning is not a new one and has, in fact, existed throughout the history of building; the 9-in. brick held sway for many years as a basic planning unit. However, with the mass-production of standard doors, metal windows, baths, walling panels and a host of other items, architects have felt for some years that the establishment of a grid which would allow the manufacturers of these articles to work to common related dimensions must ultimately lead to greater efficiency and hence to cheaper building. Various ideal grid sizes have been proposed since the war—10 ft., 8 ft. 3 in., 4 ft., 3 ft. 4 in., 3 ft. and even 3 in. All these except the last, which could hardly be taken seriously, have varying advantages and disadvantages according to the size and weight of the material concerned, the availability of manufacturers' plant, the adaptability to planning, etc. Mr. Hartland Thomas has been both an originator and the enthusiastic supporter of the 3 ft. 4 in. grid; he claims that of all the proposals put forward this is nearest to the human scale, and there is much to what he says. 3 ft. 4 in. allows just enough width for a 3 ft. corridor and partition thickness; twice this unit is a good size for a bathroom and other smaller rooms; and three times gives a dimension of 10 ft. which is a handy figure to use when planning large buildings. It is also a convenient vertical dimension, as 6 ft. 8 in. gives a decent door height and 10 ft. a reasonable room height.

Apart from this question of grid, there are many other problems encountered in the mass-production of building components, many of which were touched upon by Mr. Hartland Thomas. The most important of all, however, namely that of manufacturers' tolerances, was only mentioned by him once and that almost as an aside. Anyone who has had any practical experience in this field of building knows the difficulties that are encountered when components reach the site, as they always will, plus or minus a little bit over or under the grid. It only needs a set of components with a tolerance either way of up to $\frac{1}{16}$ in. to allow $\frac{1}{2}$ in. to be lost in 10 ft. and this, multiplied 10 or 20 times in a big building, can cause the very greatest embarrassment when it comes on the site, although the original building may have been beautifully squared up on paper to grid sizes.

The need for study of this tolerance question, which is related to the problem of jointing, cannot be over-emphasised, and it may be that if we are ever to achieve a state where a large number of building trade manufacturers are all working to one grid (and this is a highly desirable condition in order to give architects freedom to choose alternative materials while still remaining on the grid) some form of universal jointing strip will have to be devised in order to take up the varying tolerances required by different manufacturers.

Mr. Hartland Thomas concluded his lecture by throwing

out a suggestion that all concerned in the problems on which he touched should join together in the formation of a society for the interchange of research experience. Such a society could do nothing but good, and when Mr. Howard Robertson asked for a show of hands at the Royal Society as to whether such an idea would receive support in principle, the result was almost a unanimous " yes." May we express a hope that this constructive suggestion be taken up and that the " Modular Society "—as Mr. Hartland Thomas suggested it be called—be formed without more ado ?

RENTS AND REPAIRS

WE recently had occasion to refer in a leading article to the heartening, if belated, degree of agreement reached in the House of Lords that housing ought to be lifted out of the realms of party politics. It is, one supposes, inevitable that a matter of pressing (and permanent) national urgency should become the subject of party manœuvre and rivalry. But this generally applies more to controversial matters where there can, as it were, be two or more opinions as to what should best be done in the national interest. With housing, surely there can be " no two ways about it " and, as remarked on the previous occasion, the nature and colour of political ties cease to have relevance.

The precise method and direction of the " lifting " process (for housing out of party politics) still remains to be seen—though the industry which this paper represents might suggest an obvious destination—but meantime further encouraging news comes, again, from the House of Lords and, again, significantly postulates an all-party approach to necessary legislation, this time on the vexed question of repairs to existing dwellings. This is, of course, closely tied up with the Rent Restriction Acts, which however necessary in principle are by common consent overdue for amendment. It has been stated that while the rents of some 8 million houses have been stabilised under the terms of the Acts, half at the 1914 level plus 40 per cent. and half at the slightly higher 1939 level, the cost of repairs and maintenance has risen threefold since 1939.

Accepting these figures, our sympathy must go out to hard-driven and conscientious landlords. But it is the tenants of rented property who must also receive consideration if, as seems inevitable to many, the only way out of the dilemma were to be a general rise in controlled rents. There could be no doubt of the hardship that this would entail in many cases, and of the unpopularity of such a trend with millions of voters unappeased by theoretically minor changes in a hypothetical " cost of living index." Hence the necessity, politically speaking, of all-party agreement before any such trend is legalised or even envisaged. The anomaly, seen this week, where the London County Council is to raise its house rents, while the private landlord remains held in the jaws of the Rent Restriction Acts, does not make sense.

But " politically speaking " is only part of the story, and if any practicable means can be evolved to alleviate the situation they should, we suggest, be explored with quite unusual thoroughness and sense of responsibility, unmixed with considerations of political expediency.

For manifestly the answer is not, simply, " build more houses." Apart from the drain on agricultural land, the housing target which we must overhaul depends not alone on the provision of new dwellings in new places, but also on the unremitting maintenance of the *status quo* as regards both old homes in old places and the consolidation of hard-won new ground which may otherwise degenerate into slums.

For these reasons, a welcome will be given by all sides to the suggestion of Lord Morrison that the Lords should form among themselves a working party with the object of reaching an all-party agreement on the necessary legislation ; and to the proposal of Lord Silkin, principal opposition speaker, that a full inquiry " not solely carried out by the Government " should be instituted. Indeed, the Lord Chancellor, Lord Simonds, replying to the debate, referred to Lord Morrison's suggestion as " valuable " and said that this and Lord Silkin's proposal would be considered by the Leader of the House, the Marquess of Salisbury. May we venture to hope, with all respect, that this consideration may be both early and favourable, and may be given tangible outcome.

NOTES & NEWS

THE A.B.S. BALL

THE annual ball in aid of the A.B.S. Centenary Fund was held at the Dorchester on December 10, as a result of which a net profit of rather more than £2,000 has been put to the credit of the Centenary Appeal Fund for providing front doors, with homes behind them, for elderly architects and their dependants. This fund previously stood at £9,600 so that a substantial step forward has been taken towards the £50,000 target.

So excellent were the arrangements made by the Ball Committee—under the enthusiastic chairmanship of Mr. Cecil Epril, F.R.I.B.A.—that the process of extracting money from the 750 guests was practically painless. Hoopla booths (with bottles as prizes), a caricaturist, and Christmas present stalls were some of the means employed for separating architects from their cash. It was good to see quite a number of members of the materials and plant firms ; these, needless to say, did not escape either ! A particular contribution to the evening's success were the gay and appropriate stands for the side-shows made by students of the Regent-street Polytechnic School of Architecture and the ingenious table decorations made by students of the A.A., and the Hammersmith Schools. Charles Ernesco and his Dance Orchestra, as usual, made 2 p.m. arrive all too soon.

If this dance, now established as one of the highlights of the architectural year, grows any further, the committee will have to take the Royal Festival Hall to accommodate all those who wish to come. And why not ?

STRUCTURAL FAULT

A CRACK in the spire of St. Martin-in-the-Fields has recently been discovered by workmen engaged on repairing war damage. The crack, which is about 20 ft. long, is in the stonework on the east side of the spire. They have also unearthed what are believed to be the roots of a fig tree of great age near the south boundary walling. Work is to begin next month on the repairing and redecorating of the ceiling, and a small chapel in the crypt will commemorate a former Vicar.

TEMPLE BAR RETURN

ON DECEMBER 11, the Court of Common Council of the City of London decided, on a straight vote, that " Temple Bar should be brought back as soon as possible and the matter referred to the City lands committee to take steps accordingly." The Bar is at present at Theobalds Park, Cheshunt, Hertfordshire.

ARCHITECT'S APPOINTMENT

MR. MISHA BLACK, O.B.E., F.S.I.A., M.Inst.R.A., has been appointed by the

Board of Trade as architect for the United Kingdom Pavilion at the Rhodes Centenary Exhibition.

He will work on this project with his colleagues of the Design Research Unit (of which he is director), his associate architect being Mr. Alexander Gibson, A.R.I.B.A., who collaborated with Mr. Black in the design of the Regatta Restaurant at the South Bank Exhibition.

ARCHITECT'S RETIREMENT

SHEFFIELD CITY COUNCIL has recorded its appreciation of the services of Mr. W. G. Davies, F.R.I.B.A., City Architect for more than 27 years, who is retiring.

PROFESSIONAL ANNOUNCEMENT

MR. G. J. JOLLY, F.R.I.B.A., and MR. R. G. GRANT A.R.I.C.S., practising as ERNEST J. THOMAS, JOLLY AND GRANT, have opened a further branch office at 55A, Union-street, Ryde, Isle of Wight, and will be pleased to receive trade literature at that address.

FROM "THE BUILDER" OF 1852

Saturday, December 18, 1852

BRICK MANUFACTURE.—Companies have been formed in the most eligible localities that could be selected, for the purposes of manufacturing bricks in steam factories, by a new patent process. One of these establishments has, for more than twelve months past, been in operation on a small scale at Huntingdon, where six men and four boys are making 60,000 bricks a week, no alternations of weather in the slightest degree interfering with their operations. Under the same patent, and on an improved scale, immense works are just being put down at Arlesey, also, on the Great Northern Line, a little more than twenty miles north of the Metropolis, where about a million-and-a-quarter will be made weekly for the London market.

H. S. GOODHART-RENDEL, P.-P.R.I.B.A. Hon. Treasurer, Architects' Benevolent Society, as seen by Sallon at the A.B.S. Ball at the Dorchester. To left is the Menu Cover, designed by J. & G. Pinckheard.

Modern Architectural Design

MR. HOWARD ROBERTSON'S BOOK

WHEN the first edition of this book* appeared in 1932, its author had already established a reputation as a competent architect, a gifted designer, a successful teacher and a writer of readable books. Now, 20 years later, he has reached the top of the professional tree, and speaks with all the prestige of a President of the R.I.B.A. and an Associate of the Royal Academy. One, therefore, looks with interest to see what changes he has made in his popular treatise on design, which, as the publishers state, has been "largely revised, newly illustrated and entirely reset." In its earlier form it was a most useful work, written with great charm, and conspicuous for clear thinking on æsthetics as well as on practical questions. The ability to make æsthetics interesting without recourse to meaningless jargon or untenable theorising is a rare gift which the author possesses. He himself remarks in this new edition: "Never before in the history of architecture have exact science and uncertain æsthetics been so intimately connected. . . For technology in building construction . . . has been for some time outstripping the cultivation of the humanities. . . Architectural design . . . is lagging far behind. A great step forward is necessary if æsthetic developments are to regain a parallelism with scientific accomplishment."

The mere fact that this book deals with modern design suggests a considerable replacement of text and illustrations after 20 years of changing fashions, for what was the *dernier cri* in 1932 is, presumably, anathema to the students of 1952. So when we compare the choice of illustrations in this new edition with those in the first edition, we find that only a dozen or so have survived from 1932. The Stockholm Town Hall is among them, and a couple of buildings by Le Corbusier, but nothing is now illustrated from the work of Dudok, Mendelsohn or Freyssinet. Prominent among the newcomers are the Royal Festival Hall, the railway station at Rome, and three buildings by Frank Lloyd Wright; other examples are the "Dome of Discovery," the United Nations Building at New York, the pavilion at Bexhill, Peter Jones' Store in Sloane Square, two buildings from Brazil, and a number from the United States and the Scandinavian countries.

Admirably selected and reproduced as the illustrations are, it is in the text that the author's gifts are chiefly displayed, and here too the revision has been drastic. The headings of the eight chapters remain unaltered, but all through the book there is evidence of meticulous revision resulting from deep thought and modified and mellowed judgments based on wide experience. Apart from such revision (entailed in many places by the changes in the examples illustrated), he has made substantial additions to the text, and has jettisoned whole pages here and there. At the very outset he has written his passages dealing with "programme," then he devotes a new paragraph to the American "picture window," and another to the need for "a fine organisation of parts." Modern fenestration accounts for a further addition. In the second chapter, recent experiments in "free" planning, independent of walls, are noted, and fresh paragraphs added on prestressed concrete. This chapter concludes with three new pages on prefabrication, and some searching criticisms of the building industry.

The third chapter is augmented by several pages on the facing of modern buildings, very up-to-date and informative. We are told that "the all-glass facade—the romantically titled 'wall of glass'—has been at times abused, especially in domestic work"; and then follows some wise advice on American practice in using glass in design.

Coming to the delicate matter of "Expression," the author has some helpful comments on the appropriate expression for churches, stores, shops and skyscrapers. This fourth chapter also contains a dispassionate criticism of functionalism in design and of character in architecture—both new items. Under the head of "External Details," there are many fresh pages of sound technical information; and under "Internal Decoration" several more on artificial lighting, colour and furniture, on all of which the author is an acknowledged expert. These two chapters alone contain some 20 pages of entirely new text; while the seventh chapter, on "The House," is almost entirely rewritten. In the final chapter there are some references to architectural education, a topic on which the author speaks with authority; among other observations, he makes one particularly interesting comment: "No modern architect despises tradition."

From a host of passages worth quoting here is one on Exterior Materials: "The difficulty with many modern treatments based on metals, renderings, coated slabs, pigments, etc., is that buildings so treated are apt to weather unsatisfactorily in a trying climate such as ours in England. Much modern work, eschewing conventional overhangs and cornices, and faced with fabricated materials, looks its best only for a short time after completion. It then gets dirty, drab, lifeless, and even rusty looking. This is a severe criticism, but the architect has to face it and look about for himself to see how many of the fabricated materials compare, after a few years, with those which take their weathering in sympathetic fashion.

"Brick, stone, marble, slate and timber take their weathering well, acquiring a patina and a richness which soften their first crudities and lend them added beauty. Copper, zinc, lead and perhaps one or two other metals share these virtues. But where a building is constructed like a ship, a machine, or an aeroplane, it makes exactly the same demands on upkeep as do these prototypes. In other words, the cleaner, the painter, and the polisher have to be always at work. And since such feats of maintenance are becoming too onerous to-day to be tolerated by most building owners, the demand is growing for buildings that are comparatively maintenance-free."

M. S. B.

* MODERN ARCHITECTURAL DESIGN. By Howard Robertson, M.C., A.R.A., P.R.I.B.A. New edition. Pp. 228. Illustrated. Architectural Press. 25s. net.

"As an architect, Sir, I can't tell you very much about this!"

Cheaper Building: The Contribution of Modular Co-ordination

Following is a slightly condensed version of the Alfred Bossom Lecture, which was given by MR. M. HARTLAND THOMAS, O.B.E., M.A., F.R.I.B.A., Chief Industrial Officer, Council of Industrial Design, on December 10, at the Royal Society of Arts, John Adam-street, W.C.2. Mr. Howard M. Robertson, M.C., A.R.A., S.A.D.G., President, Royal Institute of British Architects, was in the Chair. Mr. Hartland Thomas said:

MY subject has its origin in the fourteenth century with the reintroduction of the brick into this country, after an absence of nearly a thousand years since Roman times. I mention this, not because I am going to treat the subject historically, but to emphasise two points: dimensional co-ordination is not concerned only with sheet materials and with light and dry construction, but we must come to terms also with brickwork and with wet and heavy construction: the current distinction between "traditional" and "non-traditional" building is unreal and confusing, and should be discarded. The other point is that the problem to-day of co-ordinating the dimensions of building elements is the result of a long process, extending over hundreds of years, in which more and more elements have been prepared in the factory to predetermined dimensions. Almost every factory-made unit that one can mention—beginning with the brick itself, and going on to baths, fireplaces, doors, windows—used to be made on the site or in the builder's own workshop. In recent years this process has greatly accelerated: the number of different ready-made parts has increased, and so has their size; electrical and mechanical elements are added to the list, considerable sub-assemblies such as kitchen fitments are produced, and sheet and panel materials and units are offered on the market for the construction of walls, floors and roofs.

The present situation is the result of this cumulative process. Fifty years ago the ready-made elements in a building were few and small: they were easily absorbed in the mass of hand-made construction on the site. Now they are so many and so large that they have begun to jostle one another. There is not enough dimensionally fluid site-work intervening as a cushion between them, so that fitting them together on the site has become proportionally expensive. The case for dimensional co-ordination, as one of the chief opportunities at the present time to lower the cost of building, is that the economies that one has reason to expect from standardisation and quantity production of the parts, are at present being dissipated in the drawing office and on the site in efforts to fit them together into whole constructions. This difficulty has, since the war, been aggravated rather than eased by the very great increase in standardisation within the different branches of manufacture, without co-ordination between one branch and another: now that there are fewer standard windows to choose from, it is even harder to find one to agree with a choice of door-frames and sheeting materials, themselves offered in fewer alternatives.

A Possible Solution

This statement of the situation will, I believe, be generally accepted. What is not so well known is that, especially during the past six years, a line of development that seems to point to a solution has been quietly gathering momentum. We can pride ourselves that it has chiefly taken place in this country. This will enable me to devote the greater part of this paper to reporting upon current British developments. I will preface the reports with a short account of the origin of the line of development that I am reporting: and I hope to conclude with proposals for co-ordinating the development itself and increasing its pace.

In February, 1946, the Ministry of Works' Standards Committee issued its second report and went into recess. The co-ordination of standard dimensions appears to have been attempted by the process of collecting all the existing dimensions laid down in British Standards and of studying them to find the highest common factor. When this proved a failure, they recommended the adoption of 3 inches "as a convenient multiple," but expressly laid down that it should not be applied as a rigid system for co-ordinating dimensions. In effect, this report declared the problem to be insoluble and left it to the process of natural selection.

At the same time other researches were discovering a way round the *impasse*. At the end of 1945 the Ministry of Works despatched a team to Germany under the auspices of the British Intelligence Objectives Sub-Committee, to survey German building and civil engineering and to select those subjects that were likely to repay further study. Mr. Richard Llewelyn Davies and I were the architect members of the team, and he has since taken a prominent part in the developments that I am about to describe. One of the subjects that we recommended for further study was the German wartime system of dimensional co-ordination. This had been laid down by a Professor Ernst Neufert, and given the force of an official regulation by the government. Its interest lay in the way it cut through the welter of unco-ordinated standards and customary sizes by prescribing a large-scale planning grid for the design of wartime buildings—2.50 metres for industrial buildings and half this, 1.25 metres, for hutments, cantonments and other living accommodation. Neufert intended that the imposition of this single broad dimensional grid would achieve significant economies, by simplifying design and erection, and by acting as a magnet to influence the dimensions of all subsidiary components to fall into phase with the grid. We found in Germany, even after the fall of the Nazis and the consequential release from compulsion to apply the system, sufficient evidence of its effect upon architects, engineers, builders and manufacturers to justify its study as a possible lever to get British researches moving again.

Development by R.I.B.A.

The Ministry of Works suggested that this subject, one of ten that we had recommended, was essentially an architectural one and should be allotted to the Royal Institute of British Architects for further development. This I was able to arrange at the Architectural Science Board and a study group was formed in January, 1947. The work of this study group was amplified late in the same year by a committee of the British Standards Institution, under the chairmanship of Mr. S. Rowland Pierce. The two bodies worked so closely together that their findings can be reported as one. The former has now been wound up after publishing its report in the R.I.B.A. Journal (April, 1951): the B.S.I. Committee continues, having published its first report last year, B.S. 1708 : 1951.

Human Scale

Our findings have been that Neufert had the right idea in plunging for a definite large planning module, instead of trying to tinker with the multiplicity of existing standards, but that in choice of module he went to too high a figure—1.25 metres or nearly 4 ft. 1 in. This figure of 1.25 seemed to have been arrived at arithmetically by progressive halving of 10, instead of being related to custom or human requirements. Also, it is characteristic of German building for everything to be rather overscaled in comparison with British practice. We examined British and foreign examples in considerable detail and came to the conclusion that some figure rather over 3 feet would be the best one for a centre-line planning module. This opinion was based upon the shoulder-width of a human being, plus tolerance for movement, plus constructional thickness on either side to centres of support. This gives a basic planning unit for the smallest compartments and recesses—doorway, staircase, passage, bathroom, bed recess. Twice this module, 6 ft. 8 in., gives a door-height including frame, or room for the length of a bed or bath. This concept, we argue, is fundamentally right because it is securely founded upon human scale, the most enduring factor in architecture, rather than upon the temporary convenience of manufacture at any particular time or place. But human scale has its importance in manufacture as well, and more still in assembly, for it controls what a man can lift and handle. The economy of machine-production demands the production of larger pieces: limitation to human scale ensures that they are economical to handle on the job.

The exact figure of 3 ft. 4 in. was chosen, out of several of this order which would have maintained the essential characteristic of human scale, partly because it is near to a metre (3ft. 4 in. equals 1.0160 metres) which might make it easier later on to conform to the metric system, but chiefly to agree with the American 4-in. cube system, which, although it has its limitations, is the only established modular system as yet in operation. In this again I submit that we were right. People in Britain have too long regarded building as a sheltered home industry. Our export trade in building components and entire ready-made buildings is already substantial, as I shall be describing later: so is our importation of components. In this matter of dimensions we would neglect the international aspect at our peril. The parochial solution, which has been advocated, of basing our dimensional system solely upon the English yard is to be avoided; though the 3-ft. size is likely to appear as a preferred dimension in dimensional stock material based upon a centre-line module of 3 ft. 4 in.

Study and discussion at the Architectural Science Board and the British Standards Institution were all along amplified and extended by the professional and industrial work of members and of those who came to give evidence. In this way study had its effect upon action, long before it emerged from the back room as reasoned proposals in a report. A milestone in development

was the report of the Ministry of Education's Technical Working Party on School Construction, which reaffirmed the general conclusions of the Wood Report as to the need for modular planning in school construction, but took note of the difficulties that had arisen from the 8 ft. 3 in. module, which does not divide easily and leads to rather coarse planning, and recommended a bay spacing of 10 ft. which can be divided into three times 3 ft. 4 in. This was adopted and now forms the framework of the Ministry's current work of development.

The Third Dimension

Before coming to practice, there is one important point of theory that must be mentioned: it is the question of thickness. This question arises as soon as anything beyond a straight run of walling is proposed. If the module is located on the centre-line, the external units at a corner will be greater than module, and the internal less, by an amount equal to half the thickness of the wall. This is the condition at a salient angle on plan: at a re-entrant angle it is reversed. In elevation or vertical section a similar problem occurs, but less frequently, because changes in floor and roof level are more rare than variations in the compartmentation of the plan. There is no complete theoretical solution and we shall see how the different designers are coping with it in practice. The American modular system, Project A62 of the American Standards Association, derived its 4-in. cubic module from what was considered to be a convenient partition thickness, thus seeking to solve the most intractable problem by making it the common denominator for all sizes. The Architectural Science Board adopted this concept of the 4-in. thickness and added it to that of the 40-in. planning module, which now appeared as a 4-in. strip in both directions at 40-in. centres. This was circulated privately in March, 1948, for experiment. Such an arrangement assumes the manufacture of stock material in dimensions conforming to 3 ft., 3 ft. 4 in., and 3 ft. 8 in. This, I think, might be extended by another 4 in. either way to add 2 ft. 8 in. and 4 ft. to the vocabulary. At the same time, 8-in. vertical increments were suggested. This being one-fifth of 40 in. would enable proportions other than square and double square to occur: in particular, one to one and three-fifths, which is close to the Golden Section.

The maintenance of the larger concept of the human-scale planning grid was, and continues to be, of prime importance, and should never take second place to schemes for solving the problem of thickness. The American system which took this latter course is making very slow progress through the mass of detail, having hardly got beyond clay products and windows, though there are over 600 manufacturers producing modular products in these categories. There are signs now of the use of a larger planning grid, usually one of 4 ft., which in our view is rather too large for economy.

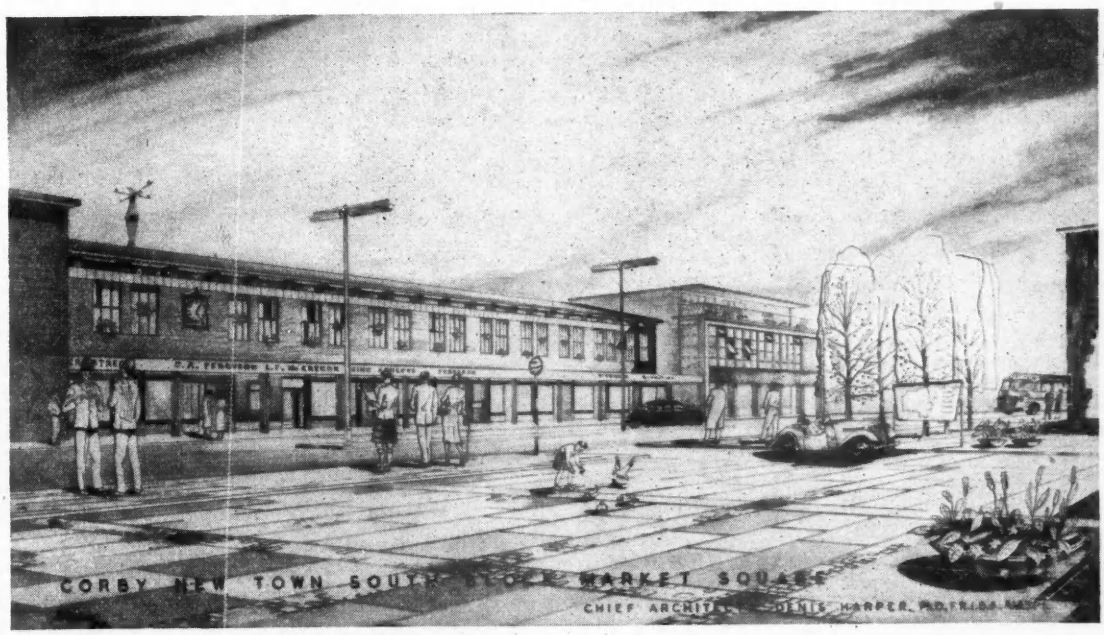
But there is other American work more in line with developments here. The system developed by Walter Gropius and Konrad Wachsmann for the General Panel Corporation is based upon a 40-in. centre-line module and exhibits the pure milk of theory in its treatment of the thickness problem. All panel-joints in floors and ceilings, as well as in walls and partitions, divide on a 45 degrees mitre within the panel-thickness, thus providing complete flexibility in plan and elevation on the grid lines, the panels bearing load without the assistance of a framework. I have made this the first example because it illustrates the theory so well, but I believe it to be too perfect for our present stage of development. The module itself is likely to have a greater influence than the details, brilliant though they are, for Professor Wachsmann told me that he has in train at the Illinois Institute of Technology a comprehensive programme of research for the Federal Housing Agency which is likely to result in the adoption of the 40-in. module.

Returning to this country for my next and subsequent examples, I mention the L.M.S. Unit Station—architects W. H. Hamlyn, Leslie Martin and Richard Llewelyn Davies. This was the beginning of a building programme which later became a casualty of nationalisation. Like the previous example, it was the product of several years' development which emerged around the year 1946, and had a considerable influence upon the studies that I have been describing. Like it, too, it is planned on the 40-in. module and makes provision for partition-junctions at every intersection of the grid internally by means of a hollow post of panel thickness: but unlike the Gropius system this is not done externally, where the concrete dado panels and the enamelled iron upper panels conform to the full 40-in. width. Unlike, also, is the placing of the columns off the main lines. This device we shall meet again: it is claimed by many to be an essential simplification of the problem at the present stage of development, but none, I think, would claim that it provides a satisfactory permanent solution for general adoption. In this particular case the continuous platform canopy, separately supported, allows the inclusion of non-modular constructions and even of rooms already existing.

Evidence next comes from Uni-Seco, Limited, a firm with an immense record of successful construction to its credit. Beginning in 1940, they supplied during the war no less than 6m. sq. ft. of buildings for Service requirements in over 500 different plans, ranging in size from telephone kiosks to canteens seating 3,000 people. After the war, they were contributing standard bungalows to the housing programme at the rate of 400 houses per week.

Flexible Planning

Mr. W. A. Balmain, the joint managing director, whom I interviewed together with Mr. R. G. Emsley, their architect, kindly let me see an internal report on modular plan-



CORBY NEW TOWN. An impression of the future Town Centre, on which work has already begun. (See page 913.)

ning addressed to their Development Committee in June, 1944. In this the argument for adopting a standard dimensional increment, in combination with the grid-planning which was already well known to the firm, is clearly reasoned. It shows also that little help can be obtained in the choice of the actual module from existing British Standards and customary sizes. As a result of this study a 40-in. centre-line grid was adopted with panel widths varying from 10 in. to 40 in. in 10-in. increments. This was developed in two systems, a modular steel frame having wood inserts to which any form of cladding could be applied on the site; and the continuation of the structural panel system, now on a modular basis. The frame system soon had to go into cold storage because of shortage of steel. In both systems the constant wall-thickness was maintained and junction-boxes or timber posts equal to thickness occurred between each frame, as for the L.M.S. Unit Station.

This system panel is still in use for export housing, but they have been forced off it for home use because, Mr. Balmain said, architects cannot think in 10-in. multiples. To assist architectural arithmetic they have now standardised their Mark VII on an 8 ft. major grid with a 6 in. minor grid for detailed planning. Mr. Balmain assured me that if there was a concerted move to adopt the 40 in. module generally, Uni-Seco could easily go back to it, especially if there was a prospect of conformity with other systems and consequent interchangeability, which he would welcome.

Summing up the present stage of their development, he said they were at a compromise: they did not attempt to carry strictly modular design right through. They design and tender on the modular basis, but having got a job, they proceed on the basis of job-standardisation. Drawing office and estimating time is saved by modular planning; and job standardisation afterwards reduces the number of different wall-units by some 25 per cent. which pays for any special units required. They emphasised that a modular system needs, in the last analysis, something you can cut, like a plank, to make the final adjustments: otherwise provisions for every contingency become too expensive. This was one opinion among many that agreed in condemning the cult of perfection in modular design and in emphasising the need for a combination of site-work and manufacture. Somewhat similar evidence came from Mr. Z. Pick, consulting engineer to Orlit, Ltd., a firm that provided concrete hutments in wartime on a 6-ft. planning grid, but now are handling design more flexibly in response to post-war demands.

School Design

I have already referred to the adoption of the 40-in. module by the Ministry of Education. Previous to that, a large programme of school construction on the former 8 ft. 3 in. module was being realised in Hertfordshire, under the County Architect, Mr. C. H. Aslin, amounting to more than 40 schools built between 1946 and 1951. The 8 ft. 3 in. system is still in operation for the majority, but six new schools are on the 3 ft. 4 in., which other local authorities have now adopted, including 15 new schools now in construction for the London County Council.

The reason for the adoption in Hertfordshire of a modular system of design, using a high proportion of factory-made units, was the need to save time, without overstepping financial limits. This is also the basis of the pioneer work now in train at the Ministry of Education. The method has been completely justified on the basis intended, for average construction time has been halved in comparison with ordinary building, whilst keeping well within the figure allowed per place. This supports my main thesis, for under different conditions and on a nation-wide basis the saving in time due to modular planning could be translated into a saving in money.

The latest Hertfordshire design can be seen at Summerswood School, Boreham Wood. In changing from the 8 ft. 3 in. to 3 ft. 4 in., the chief difference apart from the smaller planning grid is the removal of columns from the line of wall to a free-standing position in the centre of a square module. This is considered essential as the column is seen as a bar to progress in developing the modular screen itself. The basic unit of the screen is a hollow plastic panel in an extruded aluminium frame, with provision for four-way junction at every grid-intersection.

Mr. William Tatton Brown, Deputy County Architect, and his colleague, Mr. Bruce Martin, discussed with me the next stage in development. For the future, if manufacturers wish to produce units in conformity with the module, they suggest that two kinds should be made—full-size panels 40 in. wide less only manufacturing and erection tolerance; and end-units of module width less half the thickest possible partition or wall, which would involve using a filler-piece for abutting against thinner walls. Here one is reminded of the Uni-Seco compromise position and their demand for a "plank" which one can cut.

Beside their current production relying upon steel frame from Hills (West Bromwich), Ltd., the Hertfordshire architects are developing other steel, concrete and timber frames including a version in hardwood frame and plywood with C.D. Productions, Limited, for which Ove Arup and Partners are the consulting engineers. Although it is intended as an alternative and is on the same 40-in. module, the parts are not yet interchangeable with those of the steel-aluminium-plastic version, though it is hoped to achieve this later. Wooden posts off the grid-line and a deep roof slab of plywood "punts" faithfully reproduce in timber the Hills construction of steel. The panels (3 in. external and 2 in. internal) are a sandwich of hardboard or plywood faces over a softboard honeycomb core with a solid timber frame to the panel and a brilliantly simple joint. Mr. E. Collins, Works Manager of City Display, told me that these panels are already in production and separately available to buy. He is planning to generalise the system for house construction on the 40-in. module, which he is positive is the right one.

The development work at the Ministry of Education, under Mr. S. A. W. Johnson-Marshall, Chief Architect, consists in user research in conjunction with educationists, technical development of a number of modular systems with different manufacturers and contractors, and the building of actual schools for local education authorities as the "first off" in each particular system. The decision, taken on grounds of cost and educational convenience, to raise the main classroom block to three or four storeys increased technical difficulties, at the same time as broadening the relevance of the experiments to the needs of the building industry in general. Mr. Johnson-Marshall emphasised to me that theirs was an empirical approach to modular theory. The first job was to get a flexible closed system from each manufacturer working with the Ministry; later, it was hoped, they would come to terms with each other upon interchangeability of parts between the systems. He also laid great stress upon his method of cost analysis which was related to the modular system and was, therefore, readily available at the design stage of components.

At Wokingham School, which I visited with Mr. David Medd, one of the Ministry of Education architects (contractors: Gilbert-Ash), the stanchions are placed on the grid-intersections and the partitions are centred on the grid lines: but the external walls are placed off the lines at the outer faces of the columns.

Considerable care has been devoted to the vertical module, which is based upon the 2-ft. high external slab. A full 2 ft. has been allowed for the constructional depth of floors and roofs: this is a telling example of the importance and economy of standardising upon a generous size, instead of raising a host of problems by cheeseparing.

In Mr. Medd's opinion the way forward seemed to lie in modular design on the 40-in. grid, tempered by job standardisation.

Mr. F. W. L. Heathcote, of John Brockhouse and Co., one of the manufacturers working with the Ministry of Education, confirmed these opinions.

The diagrammatic plan for the Brockhouse system is interesting to compare with that for Wokingham. Stanchions are kept to the grid-intersections, except at re-entrant angles where they are doubled, and they are lost in the thickness of partitions and external walls, which follow the grid lines, with additional thickness to the outer walls. This avoids awkward junctions, horizontally and vertically, between partitions and external walls in the same line, which occur at Wokingham.

Housing Problems

We come now to housing. The Wates house, according to their architect, Mr. K. W. Bland, began development in 1944 on a 12-in. modular system, but found that the adaptability afforded by modular planning was unnecessary for coping with two or three standard plans and, as Wates are concerned chiefly with the concrete external units, it was cheaper to relate these to standard windows and to let the internal dimensions take care of themselves. This is typical of experience in house production within closed systems in face of the diversity of existing British Standards. It says nothing against the substantial savings that a universally adopted modular system might provide. Indeed, Mr. Bland said he would be very glad to use modular components if they became generally available.

Mr. Rodney Thomas, one of the architects of the Arcon post-war bungalow, is working upon a flexible house system for the Arcon group of manufacturers to export. His experience with the bungalow convinced him that even the quantities in that programme were not enough to realise the savings of flow-production. Modular planning, with interchangeable parts, is needed. Besides, his group's previous export house was frequently receiving inquiries for modifications. Consequently, the new design is an adaptable system on the 40-in. module. He insists that to simplify the problem and to permit freedom of subsequent development, equipment as well as the structural frame must be kept separate from the panel screens. He is much con-

cerned with the problem of tolerance and designs a slip-joint at every panel joint. He, like others, is anxious that development should proceed on a broad front, so that the vocabulary available to all designers is extended. He would be glad if such development should relieve the architect of attention to structural detail and free him for his chief functions of planning and appearance-design.

Mr. A. F. Hare, consultant architect to Structural and Mechanical Development Engineers, of Slough, has been concerned with a number of export houses designed for different parts of the world. He tells me that invariably the design is prepared on a modular basis, because this is economical of drawing-office time. The module is frequently one of 4 ft., for economy, of the wallboard lining; frequently, too, when the tender has been accepted, production is detailed on a basis of job-standardisation, departing from the module where this is advantageous. The prototype transportable bungalow is designed on this basis and variations on the same theme are designed in response to particular demands.

The Riley-Newsum Housing Department of Messrs. H. Newsum, Sons and Co., of Lincoln, has, since the end of 1949, built up a very substantial export business in the face of strong and established competition from overseas, particularly from Scandinavia. To sell British houses in Canada under the noses of American competitors demands a very sound basis in design to provide a more attractive product. That basis, Mr. James Riley assures me, is the 40-in. module. A 4 ft. module might have wasted space in passages: a 3 ft. one would have pinched too tightly and demanded the doubling of it to 6 ft. in places where 3 ft. 4 in. would be sufficient.

Mr. Riley, as did Mr. Johnson-Marshall, attached great importance to the speed afforded by modular planning. He looked forward to the achievement of interchangeability of parts between the different systems now current: and even the small housebuilder who laid down his plans on the modular grid should be able to shop around for ready-made parts that suited his business and combine them with brickwork and other *in situ* methods to the best economy. To achieve this he felt the want of a clear lead from a central authority.

Might I make an appeal to the Minister of Housing to give such a lead? It could take a permissive rather than mandatory form, by an announcement that areas of houses may be calculated in so many square modules as an alternative to a total rendered in square feet. This would at once give a sense of direction to development. The area of a house of 900 sq. ft. might be expressed as 104 square modules of 3 ft., or as 84 square modules of 3 ft. 4 in., giving an advantage of some 35 additional square feet to the two alternative modular versions. Standardised building, like ready-made clothes, must be allowed to fit a little loosely: we have for too long been trying to get tailor-made architecture off the hook.

As my last example I crave indulgence for a small thing of my own. It is an attempt to apply the modular idea to roof construction, whilst other systems have been more concerned with walls. A prototype is now being made to a 6 ft. 8 in. grid: the trade-name is Unitectum, which is trade-mark Latin for "unit roof." Each bay is roofed with a separate pyramid and the tops are joined together in both directions making a rigid space-frame. The prototype is designed in steel for a 60 ft. square clear span; column positions can be varied within this limit and bays can be added or taken away at will.

Before summing up we must look at the architectural implications. From the public viewpoint, there will be a subtle difference in style. Hitherto architectural design has begun with a plan of a certain size and subdivided it into its parts, creating a self-contained composition. Modular architecture proceeds in the opposite manner: it is additive instead of sub-dividing: one unit is added to another and it matters very little where you stop: Gertrude Stein anticipated this with her Continuous Present—"A house is a house is a house." But, after all, towns develop in this additive fashion and the public may well find that modular architecture produces a quieter and more harmonious civic design, one that is content to remain a background to the passing show.

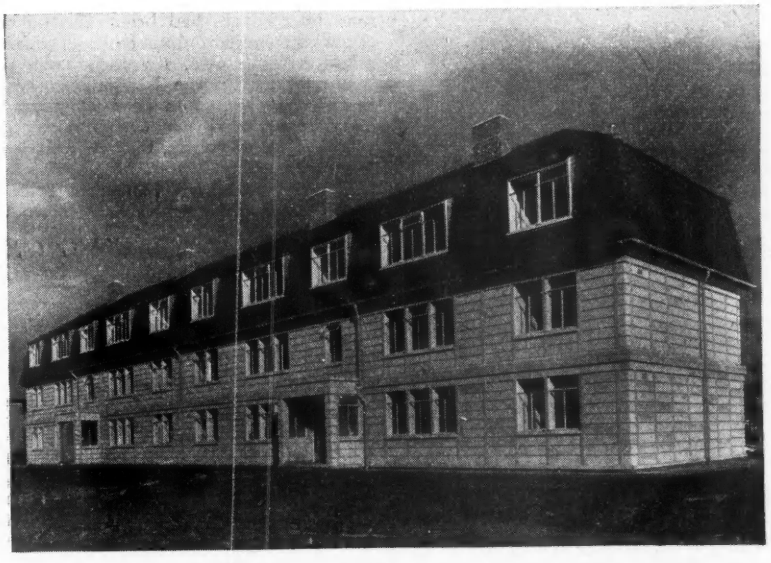
For architects it is more difficult to swallow: it seems to deny their birthright as designers. Architects are often accused of being the mouthpiece of unstandard elements, making small variations to assert their rights. This is understandable, since standardisation so often means uglification—witness the standard metal window. But let us beware of losing an opportunity to control a movement that will go ahead without us if we refuse. And I believe we shall find a new freedom in it—a freedom, as Mr. Rodney Thomas pointed out, from harassing detail and the scope for larger things.

Consider the economic side. The design-element in building is assessed at the architectural fee of six per cent. In mechanical engineering this is the design-cost for a standard product: 20 or 30 per cent. being allowed for a tailor-made design. In architecture we strive to give Savile Row service at a reach-me-down cost. No wonder it is said that only bad architects can be successful. Modular design might allow the good ones to be successful and the successful to be good. Also: it could arrest the blind-alley movement towards standardised complete buildings, which are anathema to architects.

I would like to sum up by making a proposal. The British Standards Institution has accepted the recommendation of its committee that there should be a small architectural unit for practical research. This proposal is now going the rounds of the departments concerned. It is hoped by research to revise British Standards into co-ordinated modular stock. I support this aim wholeheartedly; but preparation for this paper has shown me that two more things are needed—promotion and a referee. I have found wide agreement about the need for a centrally placed authority to adjudicate between designers upon such things as net dimensions and jointing details, so as to secure interchangeability between systems. This function could be performed by a goverment research unit, and so could promotion to some extent. But such a unit is always at risk, through its sense of public responsibility, of getting bogged down in detail and unable to take a strong clear line. Also, it might not take full advantage of private development work such as I have been reporting, although the British Standards Institution has long experience of voluntary work by members of its committees, to which I pay tribute.

"The Modular Society"

I propose, therefore, the foundation of a new private society—The Modular Society. Many people are at present urging architects, engineers, builders and manufacturers to work more closely together. Our professional code prevents us going into business together, but it does not prevent us from banding together in a society for development work. The Modular Society should be formed in close association with the British Standards Institution, which would take care of the issue of any national stan-



FLATS FOR HEREFORD CORPORATION. Seen above is the first of the three-storey blocks of flats being built for Hereford Corporation in Cornish Unit Construction by Selleck Nicholls and Co., Ltd., of St. Austell, Cornwall. The Hereford scheme provides for 84 two-bedroom flats in six blocks of twelve flats and three blocks of six flats. The block illustrated, which contains twelve flats, was completed in just under five months ; and was opened by the Mayor of Hereford on October 23 ; it is situated at Oak Crescent, Hinton.

dards arising from its researches. It would carry a small technical staff to give a service of information and advice to members: and its promotional work would include assistance to members who came up against difficulties with the bye-laws. Development on the human-scale module would be the Society's avowed aim and this should be set, to begin with, at 40 in., but not too rigidly: other sizes of modular stock around 3 ft. 4 in. should be included, not forgetting the need eventually for modular brickwork.

A private society is, I submit, the right instrument at the present time, because it would encourage the empirical approach, which is already solving problems (like the thickness-problem) that are baffling to theory unsupported by field work. Without central direction in some form, we might wait a lifetime for results. Natural selection is not enough to improve the stock of building materials: there must be selective breeding.

Discussion

In the discussion that followed, interest centred round Mr. Hartland Thomas's suggestion for forming a Modular Society. MR. JAMES RILEY said that in the fact that so many bodies had reached the same conclusion regarding the need for modular co-ordination lay the justification for the formation of a Modular Society, where the results of independent research could be brought together. He thought that a really strong case could be made out for the formation of such a body, which would have as its object cheaper building.

MR. BALMAIN said that the substance of the paper they had just heard must be kept in mind—reducing building costs. The adoption of the modular idea was bound to lead in the end to reduced building costs. The suggestion for a Modular Society was an excellent way of achieving the results they desired. He believed that no Government body could do this.

MR. H. J. MANZONI did not accept the theory that there was no single solution to the problem of modular co-ordination. The great difficulty with modular co-ordination, he said, was in getting it going in the first instance. The trouble was that at the moment individually it offered no advantages, but if it was once adopted it would offer the following advantages: greater ease in planning; a greater choice of standard products than existed today; it would avoid cramping in buildings; and it would lead to increased economy in the production of components.

Continuing, Mr. Manzoni thought there was a lot to be said for the adoption of a module of "human standard"—something near a metre. But they ought to find a module that would fit practically every dimension of all buildings, both horizontally and vertically; it should certainly not be, say, four inches, which was too small anyway. The suggestion for forming a Modular Society was, he thought, a good idea, but he did not think that it could carry out research; its appropriate sphere would more likely be propaganda. Modular co-ordination would appear to deny the architect expression, and he therefore thought that the greatest opposition to its general adoption would come from the architectural profession — the public, on the other hand, would readily accept anything that cut down the cost of building. The British Standards Institution, with the co-operation of the industry, could, he thought, tackle the technical problems involved.

Mr. Manzoni went on to say that even when modular co-ordination was accepted there was no hope for its general adoption unless it was "put across" in a big way. He believed that only the Government, with the aid of local authorities, could do this, and therefore the main task of a Modular Society would be to put across its message to the Government.

MR. RICHARD LLEWELYN DAVIES said he supported the approach to the problem put forward by Mr. Manzoni. It was important to bridge the gap between traditional and non-traditional building, a gap which, he quite agreed with Mr. Hartland Thomas, should not exist. It was the experience of most architects that it was precisely this gap between factory-made and traditional materials that was the point where most study must be made. What was the way forward? He felt they should beware of stressing grid planning too strongly; it was not certain that this was essential to the pre-planning of traditional buildings, although it was for prefabricated buildings. The main problem was to overcome the difficulty of fitting together such components as rolled steel sections, bricks, windows and so on, which were made in widely separated works and by different manufacturers.

MR. F. W. HEATHCOTE said, as an industrialist, that he would welcome the activity of the architectural profession in sowing the seed of modular co-ordination, which it was indeed their birthright to be able to do. If the seed was once sown he did not think that it would need forcing—it would just grow.

Another speaker said he did not think that the adoption of the system meant that every component must be "put on the line," any more than towns and cities had to be sited exactly on the lines of latitude and longitude on the map, although no one denied the convenience of mapping the world in that way.

Replying to the various speakers, MR. HARTLAND THOMAS said he would be grateful if the chairman would sound the meeting to find out if there was any degree of support for his suggestion for founding a Modular Society. This request was acceded to by THE CHAIRMAN, and the meeting responded with an overwhelming show of hands in its favour.

MR. E. MUNRO RUNTZ, chairman of the Council of the Royal Society of Arts, said that the Royal Society would be pleased to help the founding of the Modular Society in any way it could.

*** A report of a luncheon party given by Mr. A. C. Bossom, M.P., F.R.I.B.A., preceding the address, is on page 913.

GEORGIAN GROUP COMPETITION

THE ENTRIES submitted this year for the Georgian Group prize for measured drawings were not up to the standard obtained in the last competition and the assessors felt that none of them was worthy of the full prize of £25. They recommended, however, that a reward of £12 10s. be made to Arthur Francis, a student at Cheltenham College of Art, for the comprehensive manner in which he approached his subject, Brandon House, Painswick-road, Cheltenham.

CORRESPONDENCE

TEAM SPIRIT IN HOUSE-BUILDING

To the Editor of *The Builder*

SIR,—Is it reasonable to hold that the specification is the document to be worked to, even though full-size details differ therefrom? Is it fair to the builder that an architect can supply a full-size detail varying in a very minute section from the previously agreed detail without calling the builder's attention to the variation, but holding him responsible for carrying it out?

When will architects realise that the small builder relies on the team spirit of his small gang to bring a job through at a fair cost, and that lack of confidence in the employer or the architect can wreck that spirit? In a recent case a gang of six on concreting and brickwork were working two houses together, and the employer had instilled a competitive spirit amongst the trades, i.e., concreting block A; brickwork to block A, whilst concreting block B; brickwork block B whilst oversite to block A, and so on. Things were really moving, but on the morning the oversite was to commence, the architect arrived on site and said: "I want reinforcement in the oversite." The builder had visited the site earlier and was not contacted until 11 a.m.; he, of course, could not produce 100 yds. super of mesh or rod from his small stocks, and the earliest possible delivery was two days, so the job was held up. The bricklayers could see the oversite would not be ready for them, so they eased up, the concrete gang were put on site levelling which was not really productive, and the whole spirit of the gangs to "get stuck in" was broken.

The architect will, of course, agree to an extra for the reinforcement but who can assess the loss to the builder of the spirit he had carefully fostered? As numerous houses had been built on the estate with similar foundations and without reinforced oversites, the metal was not really required; the builder had never received complaints on some 40 houses he had built in this way over the past 15 years. But, of course, the architect said, "reinforcement"!

A SMALL BUILDER.

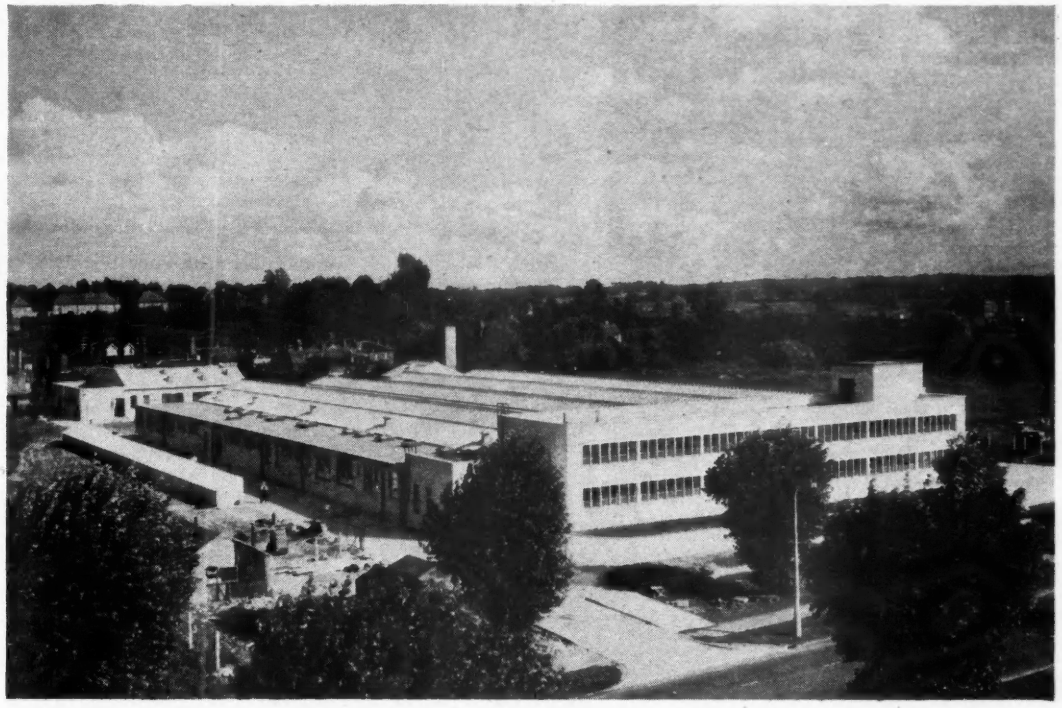
Middlesex.

SEASONAL GREETINGS

We extend to every reader our greetings for Christmas and our best wishes for a peaceful and prosperous New Year, in which greater stability in the building industry shall bring in its train a general lowering of building costs.

Our sincere thanks are due to many friends who have, in one or another form, sent their good wishes. These include:—

Southern Counties Federation of B.T.E.; Institute of Quantity Surveyors; Horsley, Smith and Co. (Hayes), Ltd.; Mackay Industrial Equipment, Ltd.; Ascot Gas Water Heaters, Ltd.; A. E. Farr, Ltd.; W. T. Lamb and Sons, Ltd.; London Co-operative Society, Ltd.; Stewarts and Lloyds, Ltd.; Edward Wood and Co.; George Barker (Builders), Ltd.; H. Newsum, Sons and Co., Ltd.; Marshall Andrew and Co., Ltd.; British Insulated Callender's Cables, Ltd.; Aveling Barford, Ltd.; Bakelite, Ltd.



Completed building viewed from railway embankment on north-west side. Below: Front elevation from north-west showing staff entrance.

FACTORY AT CRAY AVENUE, ST. MARY CRAY, KENT

For Morphy-Richards, Ltd.

LLEWELLYN SMITH AND WATERS, MM.BE, FF.RIBA, ARCHITECTS

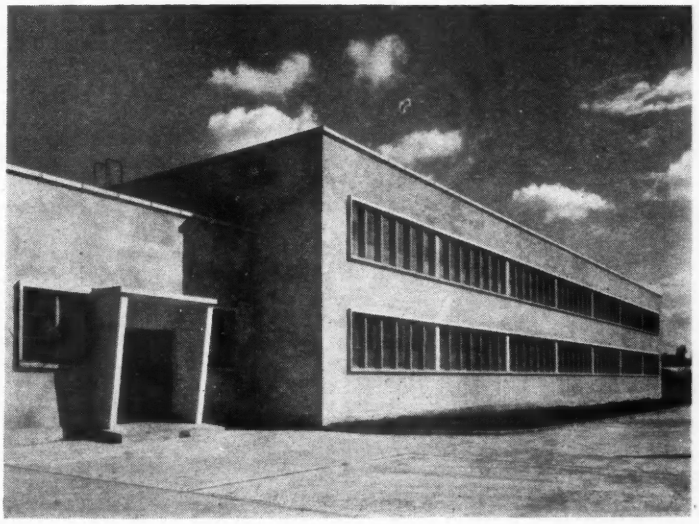
THIS factory has been built under the direction of C.A.S. (Industrial Developments), Ltd., to let on a long-term lease basis to Morphy-Richards, Ltd., manufacturers of domestic electric appliances.

The developers followed closely the recommendations of the Working Party's report by insisting (with Morphy-Richards, Ltd.'s full approval and co-operation) that all planning was completed before work started.

All provisional sum and prime cost items were eliminated (except for work below ground and the usual rise-and-fall clause for labour and materials) and the main contractor and sub-contractors worked to specification with full sets of plans (including half-inch plans) and to a lump-sum contract. The minor variations necessitated by changing manufacturing needs amounted in all to about £2,000 of which, however, more than half was known to be necessary at the time contracts were exchanged. This permitted long-term planning by contractor and sub-contractors alike and long-term ordering on all suppliers.

Weekly fully documented site meetings, presided over by the developers in the closest possible co-operation with the architects, assured integration of all trades and permitted immediate decisions being made. This minimised interruptions and reduced "bottlenecks."

The result was that the factory was completed in just over 12 months, despite an unavoidable delay of six weeks in the delivery of



steel flowing from the introduction of the priority system; the building was, in fact, completed within 40 hours of its predetermined completion date.

Site.—The site is an open one and is nearly level. Both sides of Cray-avenue have already been developed for light industries.

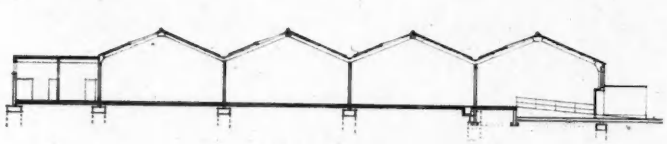
It is proposed that the ground to the north of the factory be laid out with lawns, trees and shrubs, which will act as sitting-out space for the employees. The front, to Cray-avenue, is to be planted with shrubs and flowers.

Plan.—The initial design for the factory was made by Leslie F. Halton, who was at that time architect to the general contractors. The present building was planned as the first half only of a dual building, the second half being similar and linked with offices consisting of the board room and managing director's offices over the service road entrance. So far, owing to licence restrictions, it has been possible to build only part of the first half.

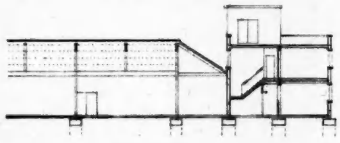
The completed work includes the main single-storey factory, fronted by a two-storey office block, the canteen and the boiler house, both of which are detached from the main building. The factory is four bays wide, with a flat roofed section on the north side which houses production and welfare offices, cloakrooms and lavatories and the maintenance shop. The first bay on the south side contains receiving and despatch bays and the plating and polishing shop.

Complete flexibility in planning the offices dictated the repetitive window treatment on the west elevation, to allow the partitions to be changed to any position. The first floor of the offices is at present to be used temporarily by the service department.

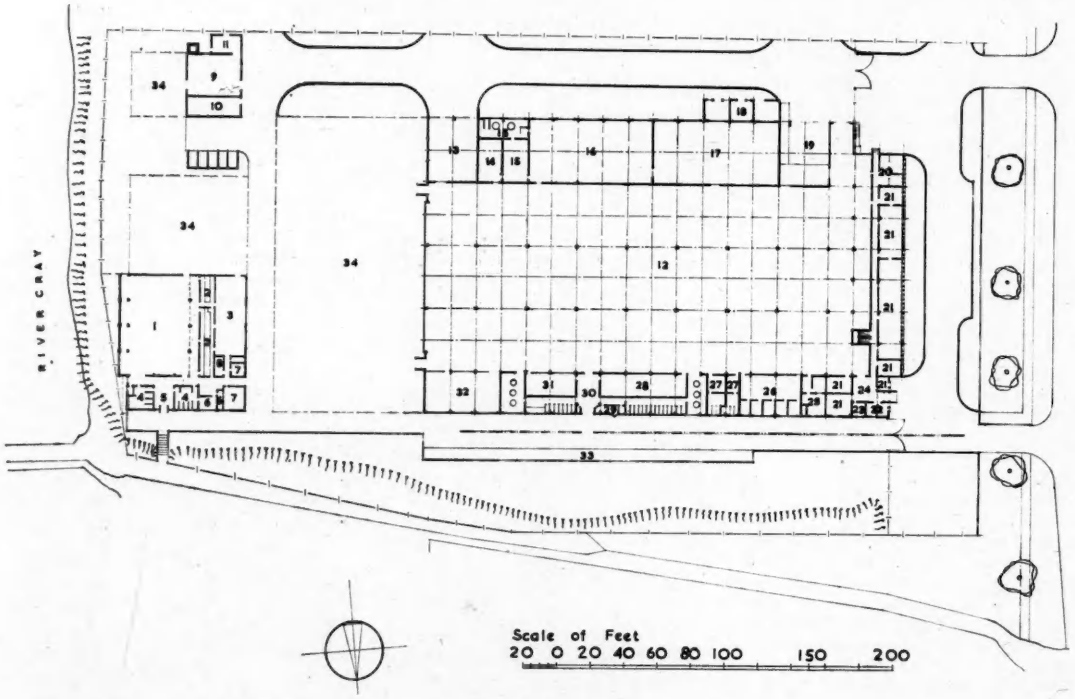
Construction.—The building is steel framed throughout, portal frames being used in the main factory, the canteen and the boiler house. Stanchions are spaced at 30 ft. centres, the span of the portal frames being 37 ft. 6 in.; the height to eaves is 13 ft. 6 in. and the unobstructed height to the ridge of the portal frame is 20 ft.; the clear height below the valley beams is 11 ft. Stanchion foundations are mass concrete, varying in depth from 8 ft. to 12 ft. The walling is carried between stanchions on reinforced concrete wall beams. The walling throughout is mass concrete, using the "On-Site" system of concrete walling. External walls are 10½ in. cavity walls; internal



SECTION THROUGH FACTORY



SECTION THROUGH OFFICE BLOCK



Plan of the factory.

KEY TO PLAN

CANTEEN

1. Dining-room.
2. Service.
3. Kitchen.
4. Lavatories.
5. Entrance hall.
6. Cloaks.
7. Stores.
8. Office.

BOILER HOUSE

9. Boiler-room.
10. Fuel.
11. Pumps.

MAIN FACTORY

12. Production area.
13. Receiving bay.
14. Polishers' dining-room.
15. Polishers' cloaks and lavatories.
16. Polishing shop.
17. Plating shop.
18. Switchrooms.
19. Despatch bay.
20. Telephones and reception
21. Offices.
22. Interview rooms.
23. Writing room.
24. Staff entrance.
25. First-aid and welfare.
26. Works offices.
27. Staff cloaks and lavatories.
28. Female cloaks and lavatories.
29. Time clerk.
30. Works entrance.
31. Male cloaks and lavatories.
32. Maintenance shop.
33. Cycle racks.
34. Future extensions.

walls vary in thickness and are 8 in., 6 in. or 3½ in. thick according to their position. Walls are rendered externally with a cement-lime mix and internally with cement and sand. The pitched roofs are covered with Universal Watford tiles, lined internally with insulating board. Flat roofs and the first floor of the office block are of hollow tile construction.

The floor of the factory area is in granolithic paving. The granolithic paving has been rendered acid-resisting in the plating shop. Floors to offices are in brown asphalt. The cloakrooms are in coloured granolithic paving. Windows are standard industrial sashes, which have also been used as borrowed lights in internal walls.

Services.—The heating is carried out by three oil-fired steam boilers which heat the building and supply process steam. Unit heaters are provided in the factory and convectors in the offices and canteen. The whole of the production area and canteen kitchen and dining-room are artificially ventilated by means of extract fans. The electrical layout has been designed to give the maximum flexibility. Compressed air is to be supplied by three pumps. As far as possible services are carried in ducts.

An extension to the present factory of some 20,000 sq. ft. will be carried out as soon as a building licence is granted. When the second factory on the south side of the service road is proceeded with, the fronts of the two buildings will be linked across the service road and the boiler house and canteen will be extended, the boiler house to the east, using the same stack, and the canteen in a southerly direction.

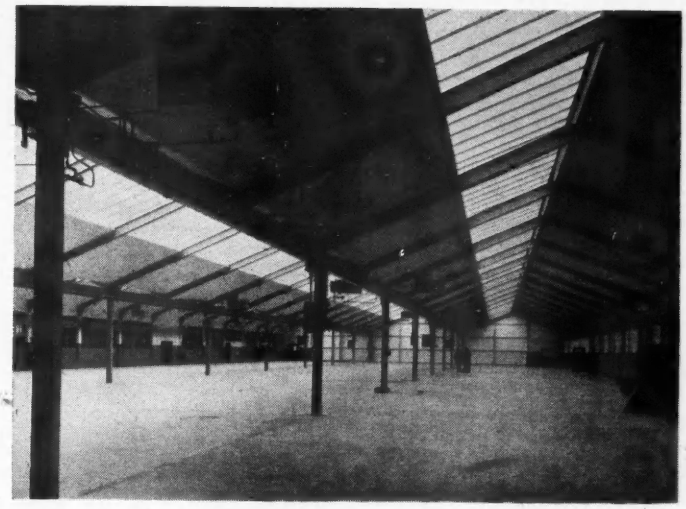
The main contractors were Messrs. E. O'Sullivan, Ltd., and following is a list of suppliers and sub-contractors :—

Precast concrete duct covers, Wettern Bros., Ltd.; hollow tile flat roofs, Diespeker and Co., Ltd.; precast concrete manholes, Trollope and Colls, Ltd.; asphalt roofs and floors, Pilkington's Asphalte Co., Ltd.; wood block flooring, Hollis Bros., Ltd.; artificial stone, The Atlas Stone Co., Ltd.; asbestos roofing, Boddy Roofing Co., Ltd.; asbestos gutters, John Denyer; insulation board lining, Eastwoods Specialists, Ltd.; metal windows, Ideal Casements (Reading), Ltd.; patent roof glazing and lantern lights, Henry Hope and Sons, Ltd.

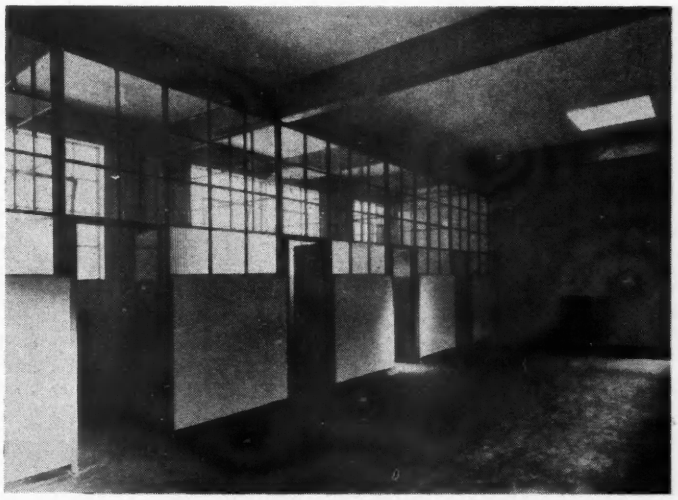
Internal glazed partitions, Williams and Williams, Ltd.; roller shutters, Shutter Contractors, Ltd.; w.c. partitions, Flexo Plywood Industries, Ltd.; door furniture, C. and S. Allgood; metal duct covers, Broad's Manufacturing Co., Ltd.; fire-escape stairs, Carron Co.; structural steelwork, T. C. Jones and Co., Ltd.; steel painters, Structural Waterproofers, Ltd.; heating and mechanical services, Arthur Scull and Son, Ltd.; electrical services, Edmundsons Electric Co., Ltd.; plasterers, E. E. Cheeseman and Sons, Ltd., and J. J. Plastering; sanitary fittings, John Bolding and Sons, Ltd.; painters, F. and J. Pilling Bros., Ltd.

FACTORY AT CRAY AVENUE, ST. MARY CRAY, KENT

Canteen dining-room.



Main production area looking east.



Works offices.

View towards the communal building. Below : Layout.

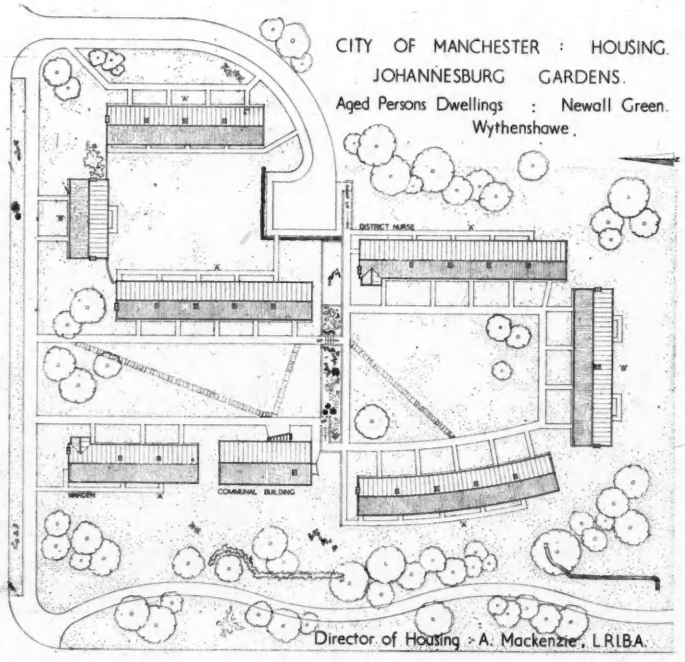
OLD PERSONS' DWELLINGS, "JOHANNESBURG GARDENS," WYTHENSHAWE, MANCHESTER

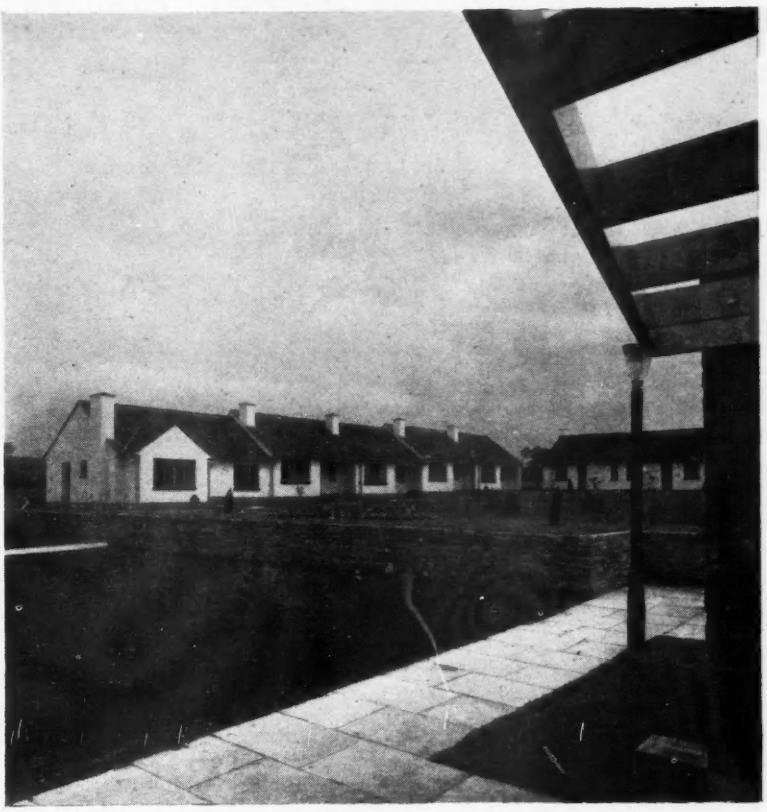
A. MACKENZIE, LRIBA, DIRECTOR OF HOUSING

THIS scheme of 26 elderly persons' bungalows together with a warden's bungalow, district nurse's bungalow and communal building is situated in the Newall Green neighbourhood of Wythenshawe immediately adjacent to the neighbourhood centre and shops.

The layout is planned informally around a green with the communal block to one side. The site slopes appreciably from south to north along the main axis of the green and this necessitated a step in the level, and the erection of a retaining wall. This wall, which is of stone, helps to bring the open space, which otherwise would have been too large, into scale with the bungalows. Easy steps are provided from the lower level to the higher, and in addition a ramp has been constructed for wheeled chairs. A large flower bed is planted at the top of the wall, the remaining area being grassed and dotted with shrubs, some of which were specially flown from South Africa by the Mayor of Johannesburg.

In addition to the retaining wall and certain screen walls, the plinth





View from communal building.

of the buildings and some of the chimneys are built in random Kerridge stone, the external walls generally being 11-in. brickwork rendered with a wood float finish and painted with a stone paint. The roofs are concrete artificial slates.

Vehicular traffic is kept out of the main central area, service access being by means of a cul-de-sac to the east of the scheme.

The dwellings themselves consist of an entrance lobby from which all the rooms except the kitchen are entered, a living-room, bathroom, kitchen, one bedroom and a sitting-porch. The nurse's and warden's bungalows have in addition a public lobby with cupboards for the equipment required for the occupant's duties, and one more bedroom. There are two types of one-bedroomed bungalows, each planned for a different aspect.

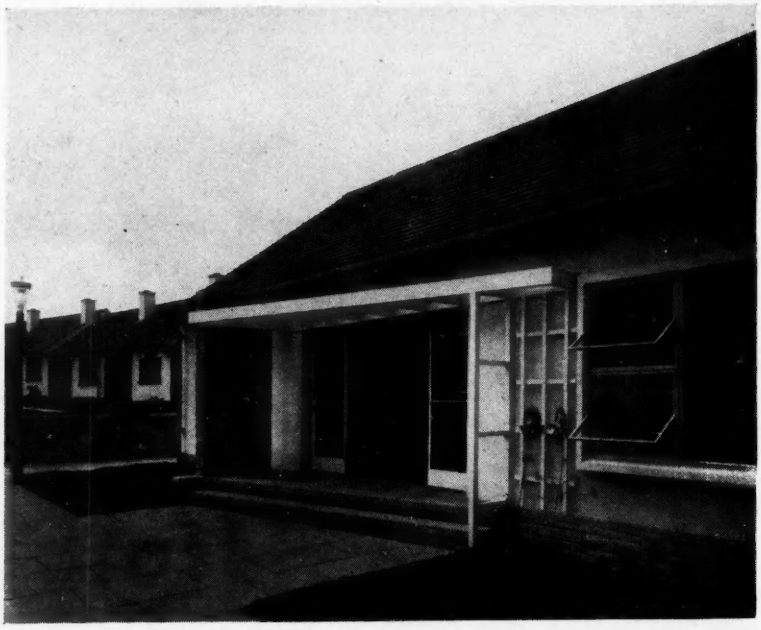
The communal block, which is intended for the use of the general public as well as for that of the inhabitants of the Gardens, consists of an entrance hall, a small sitting-room and library, a main hall, a kitchen and lavatories. A carved screen in the entrance hall commemorates the fact that the scheme was erected with the aid of funds provided by the Lord Mayor of London's National Air-Raid Distress Fund, of which the chairman is Sir George Wilkinson, Bt. (the Lord Mayor of London in 1940), who opened the scheme in July last.

TYPE 'A'
AREA - WITH PORCH - 520 SQ.FT.

WARDEN OR DISTRICT NURSE.
AREA 730 SQ.FT.

TYPE 'B'
AREA - WITH PORCH - 520 SQ.FT.

Plans of types of dwellings included in the scheme.

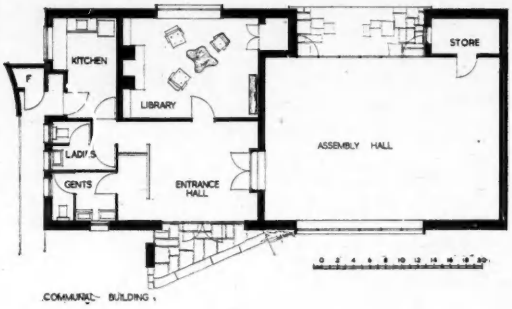


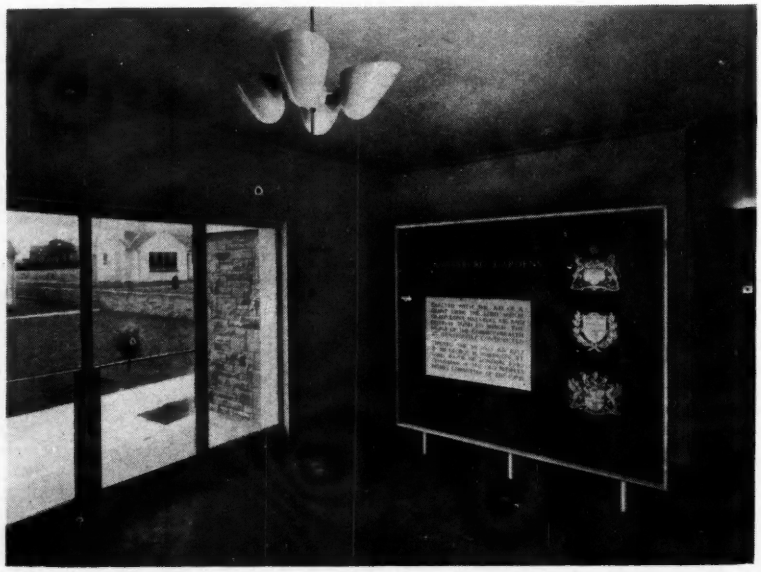
Entrance to communal building.

Members of the Housing Director's staff concerned with the scheme were: Messrs. J. J. Coleman, A.R.I.B.A., Deputy Director of Housing, and J. W. Boddy, A.R.I.B.A., A.M.T.P.I., Chief Assistant Architect.

The main building work was carried out by the Direct Works Section of the Housing Department, with the following principal sub-contractors and suppliers:

Site works, Manchester Corporation Parks Department; Kerridge stone, Jos. Wetton and Son, Ltd., Bollington; floors, Marley Tile Co., Ltd., Riverhead, Kent; roof, "Hardrow" slates by Robert Abraham, Liverpool; artificial stone, H. J. Baldwin and Co., Ltd., Nottingham; electrical installations, F. W. Cole and Sons, Manchester; lighting fittings, Troughton and Young; carved commemoration screen, Bond and Hall, Manchester; steel windows, Williams and Williams, Chester; furniture, Lewis's, Ltd., Manchester.





OLD PERSONS' DWELLINGS, JOHANNESBURG GARDENS, WYTHENSHAWE, MANCHESTER

Entrance hall in communal building, showing Commemorative Screen.

General view of slaughterhouse.

NEW EXPERIMENTAL SLAUGHTERHOUSE, FAREHAM, HANTS

DESIGNED IN THE CHIEF ARCHITECT'S DIVISION, MINISTRY OF WORKS

THE Government experimental slaughterhouse at Fareham is one of two experimental and demonstration slaughtering centres to be operated by the Ministry of Food. It has been planned to serve the needs of a large urban area with a population of over half a million. The other slaughterhouse is at Guildford.

As at Guildford, the premises and equipment have been designed to try out what is termed "line dressing" on a scale suitable to conditions in this country. There are facilities for maintaining a high standard of hygiene and for adequate meat inspection, and for the humane treatment of animals including the segregation of diseased or injured beasts. The best possible working conditions are provided for the operatives and heavy manual labour is avoided as far as possible.

The lairages are built on orthodox lines. All fodder racks can be filled from passageways, and the water troughs have gravitation feed. Special care has been taken in planning the cattle race leading to the stunning pen to ensure that animals can move forward freely but cannot turn back.

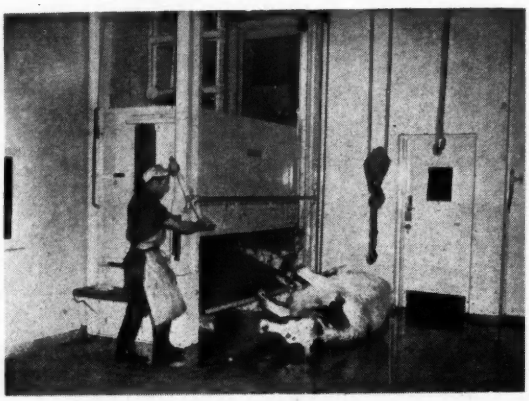
The plan of the premises shows how, at appropriate points along the dressing lines, certain organs and materials (fat, tripe, gut, hides, etc.) are removed either to chosen rooms or by elevators to the first floor gut and hide room. This gut and hide room on the first floor is a departure from standard practice in this country and abroad. The red offals are suspended in individual sets from rails which run parallel to the dressing rails. Carcases and offals which are diseased or suspected of being diseased are diverted to special rooms.

In general, normal building methods and materials have been employed; the technique is to some extent experimental but only in so far as internal finishing materials are concerned. The floors of the main slaughter hall, pig slaughter hall and by-products rooms are of non-slip granolithic incorporating a hardener with acid-resisting qualities, finished with carborundum and surfaced with a coarse non-slip texture.

The floors of the pre-cooling room, cold rooms and loading bank are finished with a special mastic asphalt surfaced with coarse carborundum. This gives the required flexibility while maintaining the necessary hardness against the softening effects of fat, and at the same time provides a non-slip surface. Walls and ceilings of the whole operational area have been finished throughout with chlorinated rubber paint. The lairage floors are finished in granolithic, incorporating dry granite chippings in the surface to provide a coarse non-slip surface.

The scheme includes an experimental deep freeze room, and the cost of this portion of the building amounts to £2,500.

The cost of the building is as follows: Main building, roads, drains, fencing, etc., heating and lighting, £150,000, plus cost of refrigeration and



The stunning pen.

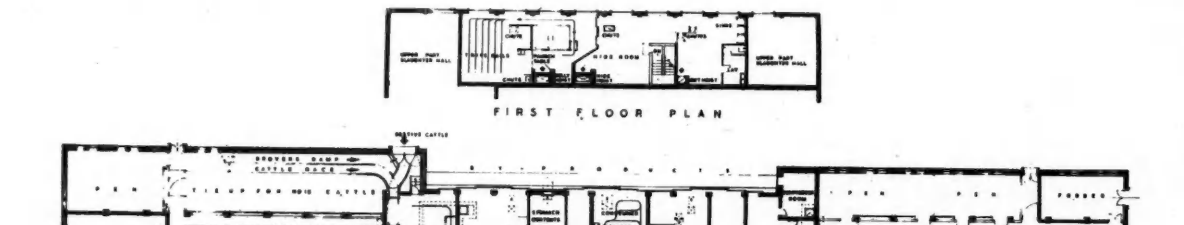
Carcase being dropped to the pritch plate.

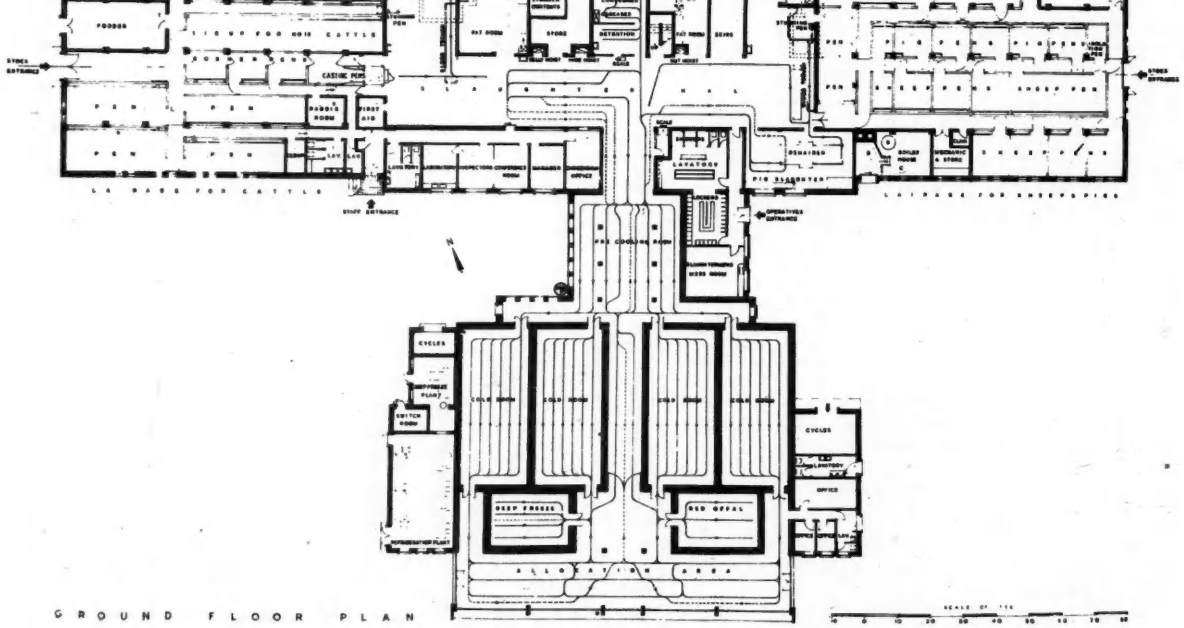
mechanical plant, loose fittings and furniture, total £198,000.

Main contractors were: Messrs. Gee, Walker and Slater, Ltd. Following is a list of sub-contractors :—

Steel doors, General Construction and Engineering Co., Ltd.; steel windows, W. James and Co., Ltd.; concrete windows, Luxfer, Ltd.; precast art stone, Blokcrete Co., Ltd., Southampton; asphalt tanking, floors and roofs, Excel Asphalte Co., Ltd.; tarmacadam roads and paths, Constable Hart and Co., Ltd., Portsmouth; pavement roof lights, J. A. King and Co., Ltd.; office and welfare flooring, Leatherflor, Ltd.; structural steelwork, William Dibben, Ltd., Southampton; lairage equipment, Geo. W. King, Ltd., Hitchin, Herts.

Chain link fencing and gates, Fencing (Shepperton), Ltd.; slaughter hall and cold room runway equipment, Lockerbie and Wilkinson, Ltd., Tipton, Staffs; stunning pen, North British Lifting and Moving Appliance Co., Ltd., Glasgow; refrigeration plant, J. and E. Hall, Dartford, Kent; lifts, Evans Lifts, Ltd., Leicester; blood tanks, Newton Chambers and Co., Ltd., Thorncliffe, Sheffield; heating installation, Benham and Sons, Ltd., Bournemouth; sewage pumps, Tuke and Bell, Ltd., Lichfield, Staffs; electrical installation, General Electrical Maintenance Co., Ltd., Pinner, Middx.





NEW EXPERIMENTAL SLAUGHTERHOUSE, FAREHAM, HANTS

TOWARDS CHEAPER BUILDING

Some Practical Suggestions

SOME practical suggestions for bringing down the cost of building were put forward by MR. ALFRED BOSSOM, M.P., F.R.I.B.A., at a luncheon given by himself at the House of Commons, on December 10, before the delivery, by Mr. Mark Hartland Thomas, O.B.E., F.R.I.B.A., of the Bossom Gift Lecture at the Royal Society of Arts the same afternoon. Mr. Hartland Thomas's lecture and the subsequent discussion are reported on page 900.

All building to-day costs too much (said Mr. Bossom) and while the public grumbled, no general wide-scale action had yet been taken. There were many practical ways of reducing costs, and rents, without cutting workers' wages.

The background to the solution was that confidence must be restored to the industry; men must not feel they were working themselves out of a job. Next, science, experience and initiative all awaited to help. We could make use of these in the following ways:—

(a) By standardising details—particularly all such items as bathroom, kitchen or heating units. This did not mean standardising design;

(b) By prefabrication of details—but not of all design;

(c) By working and adhering to a definite time and progress schedule, thus settling the progress and order of work;

(d) By site planning and a careful estimate of when and how many men would be wanted throughout the operation;

(e) By providing sound and suitable economic designing;

(f) By giving full and complete information to the builders before work was started, so that it was not left to guesswork, and delays did not result from lack of information;

(g) By obtaining full competition for all items throughout the undertaking;

(h) By mechanisation in every place that is possible;

(i) By unifying building regulations throughout the country;

(j) With sound advice or legislation from the Ministries concerned;

(k) By thorough training of the men in all branches of the industry, from the architect downwards;

(l) By complete mechanisation in the factory, in the workshops and on the site;

(m) Most important—by the full and free interchange of ideas and their proper distribution throughout the industry;

(n) And, finally, by modulisation.

Mr. Bossom concluded: "By these means, properly applied, with the complete confidence on the part of the operatives that they will not work themselves out of a job, and by complete competition, it is unquestionably possible to make great inroads into the high costs that are now prevailing, which, if something is not done, are going to mean such a charge on the national expenditure that the building industry will be put in a position of jeopardy."

MR. HARTLAND THOMAS, who also spoke, referred to his proposal that a new private society, the Modular Society, was required, to bring architects, engineers, builders and manufacturers together to work more closely together towards establishing a generally accepted module based on human scale.

MR. HOWARD ROBERTSON, M.C., P.R.I.B.A., briefly thanked Mr. Bossom on behalf of the guests, who included:—

F. W. L. Heathcote (John Brockhouse and Co.); James Riley (H. Newsum Sons and Co.); W. A. Balmain (Uni-Seco, Ltd.); S. Johnson Marshall (Min. of Education); H. Binney (British Standards Institution); W. Rowland Pierce (Chairman, British Standards Institution); W. Sandison (Abbey Road Building Society); E. Hinchliffe (Hills, West Bromwich); Dr. Leslie Martin (Dep. Chief Architect, L.C.C.); R. Bevan (Building Research Station); H. J. Manzoni (Birmingham City Engineer); Fred Keil; Raglan Squire, F.R.I.B.A.; F. R. Yerbury (Building Centre); S. D. Cooke; Ian Leslie (Editor, *The Builder*); H. Johnson (Editor, *Building*); Prof. H. O. Corfiato (University College); M. R. Blackshaw and V. D. Lipman (Ministry of Housing and Local Government); and W. F. Deedes, M.P.

HOUSE STANDARDS

Value of Registration Council's Certificate

"THE ISSUE of block licences to builders is resulting in the speedier production of better and cheaper houses," declared Mr. Andrew Stewart (Huddersfield), chairman of the National House-Builders' Registration Council at the Council's annual meeting in London on December 10. "In many cases houses are now being sold at a price below that stated on the licence," he added.

That was a natural result of partially freeing the house-building industry; and a further upward leap in output could follow an extension of that freedom. At the same time the standard of house-building was improving. As compared with last year, more than three times as many houses were being inspected and certified by the Registration Council as complying with the approved specification. Purchasers had only themselves to blame if they bought a house without the protection thus afforded. All reputable house-builders were either already, or would soon be, registered.

"But," said Mr. Stewart, "the public are woefully ignorant of this service. During the acute housing shortage they were prepared to accept almost any standard of construction, however poor. They can obtain and should demand the certificate of the National House-Builders' Registration Council and the builder's two-year guarantee. Thus they will comply with the recommendation of the Minister of Housing and Local Government which now appears as a condition endorsed on most licences.

"In these critical days it would be a scandalous abuse of the nation's resources if building material and manpower were continued to be employed in the production of shoddy-built houses. It would be an inexcusable abuse of the land on which such houses are built and a disservice to the health and well-being of present and future generations. The machinery to stamp out the jerry builder is available to the public; it is for them to use it."

Corrosion Resistance of Tin

Since more than half the usage of tin is in coatings for the protection of steel and other metals from rusting and corrosion, the Tin Research Institute has now published a book on this subject, by Mr. S. C. Britton, M.A., who is responsible for the research work on corrosion at the Institute. This book is in three parts. The first deals with the corrosion of tin itself, the second with its alloys, and the last with coatings of tin and its alloys upon other metals. The book is priced at 3s. 6d.

CORBY NEW TOWN

Special Problems of Development

SOME of the special problems affecting the development of Corby New Town were explained to the Press on December 11 by the chairman, Mr. Henry Chisholm, and staff of the Development Corporation. The occasion was chosen to coincide with the publication and submission to the Ministry of Housing and Local Government of the master plan, and the report prepared for the Corporation by its consultants, Professor W. G. Holford, F.R.I.B.A., M.T.P.I., and Mr. H. Myles Wright, A.R.I.B.A.

Corby, as a town, owes its existence to the exploitation, by Stewarts and Lloyds, of the vast deposits of ironstone in the district which are sufficiently near the surface to be worked by opencast mining. Indeed, this "great and disturbing activity," as the consultants describe it, which was only begun on a large scale a few years before the war, dominates the whole area and dictates much of the work of planning. Although the policy is now to restore the land to a level condition after working this is not everywhere possible, and it will be necessary to screen the unsightly areas of "hill and dale" left by the excavators from the residential areas of the New Town.

Another unusual factor is that no basic industries have to be provided. The steel works of Stewarts and Lloyds already give employment to 7,500 men, and will ultimately employ at least 10,000 men, which, it is estimated, will more than cater for all the adult male workers in a town that is being planned for a population of 40,000.

There is, however, a surplus of female labour, and to prevent a daily exodus of large numbers of women it will be necessary to provide light industry within Corby. Again, the proportion of children is considerably higher than the national average, which must be reflected in the provision of more schools than normal.

Almost every acre of land in Corby is doubly precious, first as good farming land and, secondly, for its underlying ironstone. The designated area has, therefore, had to be limited to 2,677 acres, but so much of this has still to be worked for ironstone that the overall residential density for that part of the town yet to be built will have to be as high as 35 to the acre.

The Town Centre

The Corporation's building work is proceeding fast, and Corby claims to be the first New Town to be actually at work on its Town Centre. Here, 35 shops, with maisonettes or offices above, are under construction. In addition, the construction of a court house, police station, public-house, multiple store and a further block of shops is planned to begin next year, and factories for the employment of 250 women and girls will be completed. The Corporation already has 80 of its houses occupied, with further completions exceeding 30 a month, and 5,000 planned in the next 10 to 12 years.

Before the war Stewarts and Lloyds built over 2,000 houses in what was then a small village, and since the war the Corby U.D.C. has built a further 2,200, so that some 18,000 persons are now living in Corby.

In an introduction to their report the consultants pay tribute to the collaboration they have received from officers of the Corporation, in particular Mr. Brooks Grundy, the general manager, Dr. Denis Harper, F.R.I.B.A., the chief architect, and Mr. A. L. Maylan, the chief engineer.

BOOKS

*** Books reviewed in these columns may be obtained on application to the Book Centre, "The Builder," 4, Catherine-street, Aldwych, W.C.2. Cash (which should include 6d. to cover postage and packing) should accompany the order.*

LONDON COUNTY COUNCIL SURVEY OF LONDON. VOL. XXIV. KING'S CROSS NEIGHBOURHOOD (Parish of St. Pancras, Part IV). By Walter H. Godfrey, C.B.E., F.S.A., and W. McB. Marcham. (London: The County Hall, S.E.1.) Price 35s.

THIS is the fourth and final volume of the survey of St. Pancras. It deals with an area affected, perhaps, more adversely than any other part of London by the coming of the railways, which here "broke up 50 years' orderly development of streets and squares in the Bloomsbury tradition." The volume is largely devoted to the description and illustration of those dignified streets and squares which were developed by enterprising speculative builders, such as Burton and Cubitt, about the end of the eighteenth and the beginning of the nineteenth centuries, on the Foundling and adjacent estates, whose histories are here recorded.

The chief architectural features of the book, however, are the Foundling Hospital, unhappily demolished in 1926, when the Hospital removed to its new building at Berkhamsted, designed by Mr. J. M. Sheppard, and St. Pancras (New) Church, designed by the Inwoods in 1818. Both buildings are well described and illustrated, the former very fully, the illustrations including reproductions of many fine photographs as well as a beautiful set of measured drawings by Mr. Sheppard. What a pity this interesting building, designed by Theodore Jacobsen in 1742, had to be destroyed. Fortunately it was found possible to preserve three of its principal rooms, which are now to be found embodied in No. 40, Brunswick-square, rebuilt by the Foundling Hospital to serve as its London office. St. Pancras Church, that remarkable example of Greek Revivalism, is fortunately still with us, though at present closed for repairs on account of extensive dry rot in the roof timbers.

About a third of the 96 splendid plates are devoted to views of those sober streets and squares of houses (which, with their charming detail in fanlights, balconies and railings, go to form the attractive residential London created about 150 years ago). It is true that we owe this London largely to the speculative builders, who had an instinctive good taste, due to inherited tradition, but the landlords of those days saw to it that their estates were properly developed and employed architects to that end, and in the case of the Foundling Estate much is owed to the careful supervision of S. P. Cockerell. The many excellent measured drawings in this volume, both in plates and text, make it, as Mr. Godfrey says in his preface, "an important reference book to street design in the late eighteenth and early nineteenth centuries."

Many other architectural features of the neighbourhood are illustrated or described, including King's Cross Station, which, designed by Lewis Cubitt, brother of William Cubitt the builder, has just celebrated its centenary. The contemporary perspective drawing given shows how great would be the improvement if the unsightly accretion of buildings which clutters up its foreground could be swept away.

Among the earlier churches illustrated are the classical St. Peter's, Regent-square, by the Inwoods, and the Gothic Revival Presbyterian Church, Regent's-square, by Tite. Among later churches is an interior view of Garner's dignified St. Michael's, Camden Town.

The text, which is obviously the result of much painstaking research, is full of information of great interest to all students of topography. Detailed lists of past residents in many of the streets and squares are given, the names including many famous in literature, science and art. An appendix gives a valuable list of buildings of architectural and historic interest in St. Pancras compiled for the Ministry of Housing and Local Government in connection with the Town and Country Planning Act. Reproductions of several old maps of the area are included and a pocket at the end of the book contains a large map of the parish with the buildings, etc., recorded coloured red. The book is very fully indexed and, like all the Survey volumes, handsomely produced.

G. J. H.

AN INVENTORY OF THE HISTORICAL MONUMENTS IN DORSET. VOL. I, WEST. (H.M. Stationery Office.) Price 63s.

THIS is the latest and in some ways the best report the Commission have ever issued. It is fully illustrated, and the pictures are mostly very good. Nothing seems to have been forgotten and the buildings are well described. In particular we note the admirable descriptions and illustrations of Sherborne Abbey, Almshouses, and School; Forde Abbey; and Melbury Sampford, not to speak of many manor houses, farms, cottages and town houses, including those of the Georgian period. This volume only covers West Dorset, i.e., west of a line drawn from Sherborne (included) to Dorchester (not included) and Weymouth (not included). It will take another two volumes to complete the survey of the county.

Architecturally, Dorset has features of its own. On the whole, it is a county of small churches, often containing remains of fairly early work, yet almost always altered or added to in the fifteenth century. The position is not quite the same as in Sussex, also an area of small churches. There more early work remains and the later additions are more limited. Dorset Perpendicular is very much in the Somerset manner, and the stone used is generally Ham Hill, bringing with it (no doubt made at the quarry) the customary local detail. Several Dorset churches have fairly rich Perpendicular additions, e.g., Loders, mostly in Ham Hill stone and there are a few rich towers in the Somerset manner. But they are not along the Somerset border nor are they actually of Somerset design. It looks as if when a parish in Dorset grew rich the people determined to have a tower of the Somerset type, but carried out by themselves. This is clear if we look at Beaminster or Bradford Abbas; or Charminster or the two towers in Dorchester (not in this book). The Dorset builders used alternate bands of flint and stone and sometimes a flint and stone chequer design. One sees this rather costly wall-facing even in buildings with thatched roofs. The ancient church roofs are usually of the West of England waggon type, but seldom elaborate. We find the same in the smaller churches continuing through South Hampshire.

In West Dorset we see little sign of Devonshire influence. There seems no penetration of Beer Stone, though the Beer quarries were near at hand and sent their carvings all over Devonshire. The waggon roofs are common to all the west and are not specially Devonian. The exiguous remains of screenwork are not of a Devon type.

Dorset has a higher proportion of good Renaissance work than we meet in Devon and Somerset (except Bath). Some of it is in areas not covered by this volume. But there are excellent photographs of the very fine classical monuments in Sherborne, Minterne Magna, Melbury Sampford, Whitchurch Canonicorum, and Long Burton. It is such a relief that the absurd time limit too long observed by the Commissioners has now been abandoned, and that classical features in churches such as Abbotsbury and Frampton and the Georgian town houses in Bridport are now included in the Survey.

The prehistoric remains, valuable as they are and well described here, are not within our province, but attention should be drawn to the outstanding cases of fine domestic work such as Sherborne Castle, Parnham, Sandford Orcas and the Queen's Arms, Charmouth. A feature of the district is the group of fine stone barns which includes the one at Abbotsbury, 272 ft. long.

The west of Dorset is full of interest, as shown by this book, but naturally many buildings are left unnoticed that would have to be taken account of in an architectural analysis of the county as a whole, which the writer has not attempted here.

F. C. E.

INDUSTRY IN TOWNS. By Gordon Logie, A.R.I.B.A. Pp. 376. Illustrated. (London: G. Allen and Unwin, Ltd.) Price 60s.

THIS is an ambitious study, almost an encyclopaedia, of British industry and its building requirements. Its compilation must have entailed a vast amount of careful and patient inquiry. Approximately three-quarters of its bulk ("Part Two") consists of detailed particulars of the industrial processes involved in each separate major industry, including gas, electricity, and refuse-disposal, but omitting coal-mining, for some unexplained reason. The information given for each individual industry describes (besides industrial processes) the type of worker and the services needed, together with hints on sites, transport, sources of raw material, etc. Thus the author provides prospective planners with a brief and useful summary of probable requirements for many types of industrial building, but not with specialised advice on design, though the numerous and excellent illustrations give many helpful examples of well-designed factories, etc., at home and abroad.

The first quarter of the book, "Part One," bearing the caption "The General Picture," provides practical advice based on "Part Two," which it summarises. A chapter on "The Distribution of Industry" recalls the findings of the Barlow Commission of 1936 and the Act of 1945, since when "only minor changes have taken place."

The next chapter deals with "The Location of Industry" on very general grounds, and then provides a most elaborate table showing the "location factors" of all major industries, about 180 in number. A short chapter on "The Theory of Industrial Zoning" states the orthodox town-planner's view on this difficult topic, but condemns rigid insistence upon the complete isolation or segregation of all industrial buildings as "the blindest dogmatism."

Next come three most important chapters, full of useful information and well illustrated, on "Industrial Estates," on "Small Factories," and on "Industrial Architecture." In the third of these, Mr. Logie includes a discerning comparison between industrial architecture in this country and in Switzerland, much to our disadvantage, though he admits extenuating circumstances.

Chapters follow on "Industrial Nuisance," on "Special (i.e., noxious) Industries," on "Transport" with tables of annual tonnage per worker, "Human Relations," "Industrial Surveys," "Industrial Density" with pages of tabulated information on "workers per acre" of site, and floor space in square feet per worker. One discrepancy should be corrected in a second edition: the number of workers on the Slough Trading Estate is given as "38,000" on p. 38, but is said to be "unknown" on p. 48.

M. S. B.

THE LAW AND PRACTICE OF TOWN AND COUNTRY PLANNING. By Percy Lamb, Q.C., and Montague Evans, M.C., F.R.I.C.S. (London: Staples Press, Ltd.) Price 63s.

BOOKS on the Town and Country Planning Act, 1947, have in the main taken one of two forms. There have been comparatively short "narrative" accounts of this complicated piece of legislation, and the value of these books as an introduction to the Act cannot be overstressed. Then there have been books of varying sizes giving the text of the Act and Regulations annotated section by section.

Messrs. Lamb and Evans steer a middle course. The subject matter is broken up into a number of chapters written mainly in narrative, but with the text of the appropriate orders and regulations interspersed. The great merit of this treatment is that it breaks the Act up into logical parts, and saves the reader the trouble of having to refer backwards and forwards as is inevitable in dealing with the actual text of a modern statute. The interspersing of the regulation is, however, unusual, but may appeal to some readers.

The authors are to be complimented on taking a wide view of what is included in the term "town and country planning." They have included, for instance, chapters on the Housing Act, 1936, the New Towns Act, the Trunk Roads Act and similar legislation, and the Agriculture and Forestry Acts, in so far as all these bear on the general subject of town and country planning. The Forestry Act, 1951 (which is important for its bearing on tree preservation orders and permission to fell trees), is not included, but it may well be that the Act appeared too late. The London Building Acts are also dealt with so far as relevant.

The book is a substantial one of over 900 pages including the index, and considering its size and high quality production, the price is not unreasonable.

A. E. T.

LAW OF EASEMENTS. By S L. Newcombe, M.A., Ll.B. (London: The Estates Gazette, Ltd.) Price 27s. 6d.

THIS IS ONE of a series of text-books approved by the College of Estate Management, and thus is intended primarily for those studying surveying and auctioneering. The law of easements, however, is of considerable importance to the building industry so that this book should be of value to architects and builders who require a general introduction to the subject.

A previous edition of this book appeared over a quarter of a century ago, and, although the main principles of the law of easements has remained unchanged, there has been a considerable volume of legislation affecting parts of the subject. The Housing and Planning Acts, for instance, provide for the extinguishment of easements in certain cases, and there have been some important measures dealing with rights of way.

Public, as distinct from private, rights of way are not, strictly speaking, easements at all, but they are sufficiently analogous to easements to justify reference to them in a book on the subject. Unfortunately, the author's treatment of this new statute law is somewhat sketchy. A few additional paragraphs on the extinguishment of easements under statutory powers would have greatly enhanced the value of this book without destroying its introductory character. There is, moreover, one surprising error; the author refers to the power of the Minister of Agriculture to make access orders under the Access to Mountains Act, 1939, overlooking the fact that this Act has been repealed and replaced by far wider powers under the National Parks and Access to the Countryside Act, 1949, which is completely ignored.

In general, however, this is a useful little book, which the reviewer has studied with profit to himself. It contains a number of chapters on general principles, followed by a more detailed discussion of some of the more important easements such as rights to light, air, support and water. As far as possible, the author has noted all cases decided since the previous edition.

A. E. T.

THE PUBLIC UTILITIES STREET WORKS ACT, 1950. By Harold Marnham, B.A., Ll.B., and W. O. Rouston, M.A. (London: Charles Knight and Co., Ltd.) Price 25s.

THE TRADITIONAL PLACE in which to lay sewers and mains for water, gas, electricity, etc., is under the highway. This time-honoured practice has the merit of involving the least inconvenience, but it is, nevertheless, inconvenient. The breaking up of a busy road or street can involve serious delays to traffic and general inconvenience to the public. Again, irritation can easily arise between different authorities when statutory undertakers' apparatus is altered or affected by street works. These problems were considered before the war by a Joint Committee of both Houses of Parliament, under the chairmanship of Lord Carnock, and it is probable that but for the war ameliorative legislation would have been placed on the Statute Book a good time ago. In fact, it was not until 1950 that Parliament passed the Public Utilities Street Works Act, based on the recommendations of the Carnock Committee.

The new Act should do much to reduce the inconvenience caused to the public by the breaking up of roads and streets. In the first place, statutory undertakers are now required to submit to certain other authorities plans of any major works they propose to carry out in a public highway or in a street which the local authority has declared is likely to become a publicly maintainable highway; by this means an agreed plan can be obtained, but in the absence of agreement a plan may be settled by arbitration. Statutory undertakers are further required to carry out their works as expeditiously as possible, and reinstatement must be begun without delay. They are also required to remove superfluous material without delay, and to take other measures for the convenience and safety of the public. Then again, statutory undertakers are now empowered, and indeed may be required, to lay their apparatus beneath land at the side of the highway instead of under the highway itself, where such land can be made readily available to them for the purpose; this is obviously a valuable innovation, and, as the Minister of Transport said on the second reading of the Bill, it is surprising that it was not introduced long ago.

This brief reference to some of the more important provisions of the new Act will show what a useful measure it is. But, although its objects are simple enough, the Act itself is a complicated one. A guide to the Act has been very much needed, and this need has now been filled by the publication of a short book by Messrs. Marnham and Rouston. There is a useful introduction, followed by the text of the Act annotated and explained section by section. Also included are the notes issued by the Ministry of Transport and the regulations made under the Act.

This is, perhaps, a specialised subject, but, for those who find themselves involved in it, this book will be invaluable.

A. E. T.

PART-TIME TEACHING. By F. W. Kellaway, B.Sc., Dip.Ed., Principal of the North Herts Technical College. Pp. 124. (London: G. Bell and Sons, Ltd.) Price 7s. 6d.

THIS LITTLE BOOK is dedicated to Mr. John Newsom, the energetic Director of Education for Hertfordshire, who has done so much to promote education and school-building in that county. Many of our readers, doubtless, undertake part-time teaching in technical schools; partly, no doubt, to augment their incomes, but sometimes because they like it; and Mr. Kellaway admits that in so doing they often learn as much as they teach. He makes it clear, however, that such work requires a great deal more than mere technological knowledge; though that is essential it needs more knowledge of educational methods and of the national education-machine than most part-time teachers possess at the outset. To provide a modicum of that knowledge is the purpose of this useful manual.

According to the statistics in the appendix, for the session 1949-50, some 93,000 evening-students of building were then attending 5,900 classes in England and Wales, and 32,000 apprentices were being released to attend in the day-time. The former group included a high proportion of adults with a great variety of educational background; and that fact renders a teacher's task very difficult. Such men come to evening classes after a long day's work, often tired out; but attendance is voluntary, and they are, therefore, frequently keener and more receptive than apprentices released in the day-time and attending compulsorily. Mr. Kellaway's advice on applying for posts, preparation and illustration of lessons, elocution, framing a syllabus, use of the blackboard, equipment and textbooks, homework, on the teacher's own personal appearance and on answering questions is all excellent; while his warnings about scientific systems of marking may startle a novice but are very sound. It seems odd that he makes no mention of National Certificates.

M. S. B.

CHURCH ROOFING MATERIALS

ALUMINIUM AND ZINC

THERE FOLLOW the fourth and fifth reports in the series on Church Roof Coverings compiled by the Roofing Committee of the Central Council for the Care of Churches in conjunction with the Society for the Protection of Ancient Buildings. The sixth (on Non-traditional Materials) will follow shortly. The whole series (which, in addition to the materials already mentioned, deals with Lead; Copper; Thatch; Shingles; Tiling; and Slates) has been brought together in a booklet, "Church Roof Coverings," obtainable, price 2s. 6d., post free, from The Publisher, "The Builder," The Builder House, Catherine-street, Aldwych, London, W.C.2.

4.—*ALUMINIUM ROOFING*

THE first attempt to isolate aluminium was made in 1807, and was carried out by Sir Humphrey Davy. A year later the same English chemist isolated magnesium, but it was not until 1886 and 1900 respectively that electrolytic processes of extraction were developed and enabled supplies of these metals to be produced upon a commercial scale. Aluminium is the most abundant metallic element, forming according to recent computation 8.05 per cent. of the earth's crust to a depth of 10 miles.

In these notes the word "aluminium" is used without qualification. It should be appreciated that strictly speaking "aluminium" means the metal itself in various grades of purity from 99 per cent. upwards. Following present-day practice, the word should be deemed to cover any one of the family of aluminium base alloys. BS. 1470 is the British Standard Specification for general engineering purposes covering aluminium sheet and strip. At present a British Standard Code of Practice (General Series) on Aluminium Roof Coverings Fully Supported, is under preparation.

Aluminium has not been available for roof covering for a period comparable with that during which lead, copper or zinc have been used, and thus there has not been the opportunity of gaining the extensive information which is available on the use, behaviour and durability of the traditional metal roof coverings. At the Church of San Gioacchino, Rome, the main dome and three subsidiary domes were roofed with aluminium in 1897; in 1937 the aluminium was examined and found to be in good order. There was some pitting which is stated in a paper on this Dome by Professor D. Ing Carlo Paneri to be 0.05-0.15 mm., equivalent to a maximum depth of 0.006 in. In 1900 the dome of the administrative offices of the Government of New South Wales at Sydney was roofed with corrugated aluminium sheets. These were removed in 1927 because copper fittings had been used and deterioration had occurred near these, otherwise the sheets were in good condition. In 1912 the dome of the Commerzbank, Dusseldorf, was sheathed in aluminium. The sheathing was blasted off in an air raid in 1944, but portions were salvaged by the bank's architect. From a recent examination of the material, it is considered that the aluminium would have given service for many years if it had been left undisturbed. Eros was cast in commercial purity aluminium and has stood unprotected in Piccadilly since 1893, and is still in a good state of preservation. The aluminium batten-seam roof over the nave, chancel, transepts and the tower offsets at the East Liberty Presbyterian Church, Pittsburgh, was executed in 1931 using a commercial grade aluminium sheet. This was inspected in 1944 and again in 1946 and found to be in excellent condition. As far as is known, no English church has had a roof sheeted with aluminium for a sufficiently long period to enable data to be obtained as to how the material is likely to stand up to the exacting standards which must be satisfied if a material is to be generally specified for use on churches, a church being built to last not for one or two generations but for centuries. Maintenance must be reduced to the absolute minimum, and this limits the choice of materials almost as much as do the architectural demands of Church design.

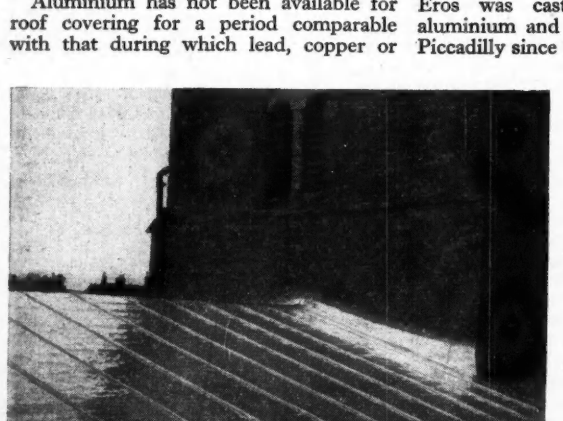


Photo: British Aluminium Co., Ltd.

Church of SS. Peter and Paul, Scaldwell. (20 *s.w.g. higher purity* (99.99%) *aluminium—dead soft timber.*)

FAILURES AND SUCCESSES

In general building practice, aluminium has been used to cover both pitched and flat roofs with varying success. It is well to mention that there have been some failures as well as some successes. This is only to be expected in the use of a comparatively new material. The effect of this material when applied to pitched and flat roofs is akin to lead and copper in that the method of fixing gives rise to seams, welts and drips which resemble in scale, spacing and position those traditionally associated with these metals. In those positions where aluminium may be left without any additional surface protection and the atmosphere is reasonably pure, the colour will be a uniform light grey, the result of an oxide film. After the initial oxidation the whitish grey will remain stable; the effect is rather like the whitish-grey oxidation of a lead roof of some age, but has less charm in that the subtle colour and texture variations are missing.

Several English church roofs have recently been covered with aluminium sheeting. At St. Michael's Farthinghoe, Nether Worton and Aston le Wallis, fully annealed commercially pure 22 s.w.g. aluminium sheeting has been used. By experiment it has been found that difficulties arise in working aluminium sheets of heavier gauge. After brushing down the decking, an underlay of inodorous felt was laid and upon this the aluminium sheeting was placed and fixed by the standing welt system. Where flashings have been tucked into mortar joints, the aluminium has been given several coats of a bituminous solution. It is most desirable that these roofs, which could form a highly valuable "guinea pig," should be kept under observation so that in time authoritative unbiased information will be available on the use of aluminium for church roofs.

The present state of knowledge as to the durability of aluminium sheeting is not yet sufficiently comprehensive or authoritative to warrant recommending aluminium as a metal equivalent to lead and copper for use on church roofs. Aluminium can be recommended as forming a superior temporary or semi-permanent roof covering likely to give long trouble-free service.

QUALITIES OF THE METAL

As aluminium appears to have so many qualities which should make it an excellent material for Permanent roof sheeting on churches, not the least being economy, it is most desirable that:—

(*a*) A number of carefully selected churches in districts varying from remote rural to seaside and heavy industrial should have a roof covered with aluminium so that a full-scale controlled experiment could be undertaken over a long period, and authoritative information obtained as to aluminium's

Photo : Northern Aluminium Co., Ltd.

Church at Nether Worton, Oxfordshire. Seen above is a view of an apron roof, covered in aluminium, using the standing-seam technique as in copper roofing practice. The material used is .028-in. gauge commercially pure aluminium, fully annealed.

performance and suitability as a permanent roofing material on churches.

If observations under (*a*) should make it desirable :—

(*b*) Research should be undertaken to find an aluminium alloy or an exceptionally pure aluminium that would give the performance and appearance needed for general use as a permanent roofing material for Churches.

(*c*) Investigations should be carried out as to the best methods of forming the decking to receive aluminium sheeting, bearing in mind the peculiar difficulties both aesthetic and technical likely to be met with in connection with ancient roofs and the special conditions as to heating and ventilating churches.

There are many other points upon which authoritative information is needed and which would be obtained from the kind of experiment outlined.

GENERAL GUIDANCE

As there may be occasions in the immediate future when the use of aluminium sheeting is expedient, a few notes of general guidance are given. It is stressed that it is important to seek expert advice as to the particular aluminium alloy or degree of purity in commercial aluminium which should be used for a particular roof. Expert guidance is also necessary as to the technique to be employed. Architects will find it helpful to discuss problems with the Aluminium Development Association. In the not too distant future it is hoped that the British Standard Code of Practice will be available and serve as a general guide. The Aluminium Development Association's recently produced paper " Fully Supported Aluminium Roof Coverings " is of value.

In considering the suitability of aluminium for semi-permanent roof-sheeting on churches, various factors in addition to general ones always applicable should be carefully weighed before a decision is reached for or against the use of the material.

The aluminium and the aluminium alloys now available for roof sheeting form a very lightweight covering. The specific gravity of aluminium alloys ranges from about 2.65 to 2.85 as compared with approximately 7.8 for steel, 8.8 for copper and 11.4 for lead. An average figure for the weight of 1 cu. ft. of wrought aluminium alloy may be taken at 170 lbs. compared with 487 lbs. for steel, 550 lbs. for copper and 710 lbs. for lead. For covering ancient timber roofs in a frail condition or for lightening roof loads on weak walls, clerestories, arches or foundations, this low specific gravity of aluminium alloys may be an important consideration. The appearance of aluminium alloy roofing has already been considered, and durability is covered later. Where rainwater from adjoining roofs covered with copper is likely to drain on to an aluminium roof or where rainwater is likely to run on to an aluminium roof after flowing over alkaline building materials, the aluminium sheeting must be specially protected or the source of danger nullified, should that be possible or desirable. Galvanic action between aluminium in close contact with various other metals and the effect on aluminium when in contact with cement mortar, cement concrete and certain timbers is easily overcome by appropriate treatments, and presents no difficulties. Rainwater from roofs covered with aluminium alloy discharged from chutes or dripping eaves is unlikely to harm stonework or brickwork. Water discharged from an aluminium-covered roof is unlikely to harm roofs covered with lead or copper. Great care should be taken to avoid crevice attack, that is, the building-up in the joints of dirt, which in industrial areas is likely to contain corrosive substances and, not being dispersed by the action of rainwater, may set up severe corrosion. Good design and craftsmanship is the best protection against crevice attack, but in certain instances the use of a sealing compound is an additional safeguard.

The thermal insulating properties of aluminium alloys are superior to those of lead, copper and zinc and, when unpainted, radiant heat from the sun is diverted. Aluminium is not subject to " creep " and may be safely used on steep pitches.

Where heavy traffic is expected on an aluminium-sheeted roof, 18 s.w.g. is recommended. It should be remembered that aluminium can be obtained in varying tempers, soft or annealed, one-quarter hard, one-half hard, three-quarters hard and hard. Expert advice should be taken on these points before specifying the aluminium to be used for a particular roof. Scratches and indentations are harmful in that these may lead to the formation of cracks and punctures, but any such damage to the oxide film is made good by spontaneous oxidation.

TYPES OF THE METAL

It has been stressed that if aluminium roofing is to have a reasonable expectation of life the selection of the type of aluminium used is of the greatest importance. It may be taken that SIA (99.8 per cent.), SIB (99.5 per cent.), SIC (99 per cent.), NS 3 (aluminium manganese alloy), NS 4 (aluminium magnesium alloy) of BS 1470, all in soft condition, are likely to be satisfactory. The thickness of the sheets should be not less than 22 s.w.g. Higher Purity Aluminium 99.99 per cent. in soft condition of 18 s.w.g. appears to have many advantages.

The types of aluminium mentioned are those most likely to be resistant to weathering and to the effects of smoke-laden atmospheres. Commercially pure aluminium and the alloys are protected from deep-seated corrosion by an invisible oxide film. Aluminium manganese alloys are specially resistant to significant amounts of the ammonia, organic acids and sulphur-bearing acids found in urban and industrial areas. The invisible oxide film which forms on the surface of the metal is sufficient protection against atmospheric attack without painting, and many structures exist with unpainted aluminium roofs which are quite satisfactory after many years. The thickness of the naturally formed oxide is of the

order of a hundred-thousandth of an inch.

When first exposed to the atmosphere, aluminium surfaces become slowly covered with a loosely adherent white deposit. Unless it is remembered that, unlike most metals, aluminium does not corrode at an even rate, undue emphasis is likely to be attached to the effects of the initial corrosion. There are strong reasons for assuming that the rate of corrosion with aluminium decreases progressively with time and even over a number of years. The corrosion time-curve is asymptotic, and if a suitable thickness of metal is used it is likely that corrosion may become negligible before having any serious affect on the strength and life of the metal. This is largely borne out by the condition of the aluminium on the domes of San Gioacchino, Rome, but it is too early in the development of aluminium to draw a firm conclusion on this matter.

5.—*ZINC ROOFING*

History: The process of zinc smelting was discovered in India, probably about the twelfth or thirteenth century, and spread to China and the East Indies. By the early seventeenth century the metal was being imported into Europe on a large scale, but it was not until the mid-eighteenth century that the first smelting works in Europe was set up at Bristol, and not until the early nineteenth century that good sheets were rolled, by a process developed in Belgium.

As experiments, the church of St. Barthelmy, in Liege, was roofed with zinc in 1811, and the Cathedral of St. Paul in 1812. Since that period zinc has been one of the most popular roofing materials in Western Europe. In this country its use gradually declined after 1914.

Suitability: Zinc is not suitable for use on churches as its normal life, even if the thicker gauges (14 zinc gauge or over) are used, cannot be more than about 40-50 years.

Bright new zinc sheet on exposure to the atmosphere forms a surface coating of basic zinc carbonate, and although this is itself some protection, unlike the cases of lead or copper, the carbonate process continues on the face of the pure metal beneath, until eventually the whole sheet is changed from metallic zinc to a brittle zinc carbonate.

Zinc should not be used for "making up" iron rainwater pipes or gutters as corrosion of the zinc is liable to take place, nor should zinc be used for flashings as it is more liable to corrosion by alkalis from the mortar than lead.

Zinc should not be used for soakers or aprons in slated or tiled roofs as their life will be considerably less than that of the roofing material.

Zinc is not approved as a roofing material by the Church Commissioners or the Incorporated Church Building Society.

New Journal

The December issue of the Journal of the Building Surveyors' Institute is the first to be published by that body. It includes in its contents details of the members of the Executive Council, and a report of the first annual general meeting, held last September 27, at Willesden Technical College.

LYNMOUTH

Report on the August Floods

THERE are two approaches possible in considering the restitution of Lynmouth, says MR. C. H. DOBBIE, B.Sc., M.Inst.C.E., in the foreword to his report on the Lynmouth floods of last August, which he has prepared for the Devon River Board.

The first is not only to make the town safe against the repetition of such a storm, but also to make it safe in such obvious manner that public confidence is restored to the extent that people will stay there with their families on holiday.

The second is to rebuild the river walls to a lower standard and to leave Lynmouth to its natural conditions. Escape routes could be provided so that floods, while causing damage as elsewhere in England, need not be accompanied by loss of life. Lynmouth would cease to attract residential visitors and would depend upon day trippers.

To make the town safe, and safe for all to see, Mr. Dobbie recommends that: (a) Adequate channels and bridges should be constructed; (b) No buildings should be allowed on the area between the East and West Lyn rivers, and existing remains should be removed; (c) A relief channel should be constructed on the right bank across the recreation grounds in front of Manor House; (d) Check dams to collect boulders should be constructed in both the East Lyn and West Lyn valleys.

To ensure safety and restore confidence to inhabitants and visitors in times of severe storms, he considers it necessary to carry out river works in three stages: emergency works; works of reconstruction; and subsequent inspection and maintenance.

In his actual report, Mr. Dobbie recommends that works should be generally integrated so that materials are used to best advantage with the least double handling, e.g., material dredged from the river should be used for filling and selected parts for masonry. Work must be mainly carried out in the summer months, and so adds to the seasonal demand for labour, instead of helping it. To cope with works of the magnitude proposed, he says, it will be necessary to transport men from a wide area; thereby adding considerably to the cost. Even so, it is unlikely that all the works could be carried out in one season. Priority would have to be given to the more urgent works and then complete safety could be built up during the following season. For the detailed design, trial holes will be needed at frequent intervals, and it is likely that it would be more economical to make these holes as work progresses rather than to let a separate prior contract.

The river walls would be of concrete with rough masonry faces, the bed would be of boulders and rock fragment, stabilised at frequent intervals by concrete and grout kept out of sight. The harbour wall and retaining walls would also be concrete masonry faced. The relief channel would have a masonry faced inlet weir with a roadway behind and then grass. At the sea end would be top hung doors, suitably balanced, and cushioned against wave action of the sea. The check dams of concrete on solid rock, faced with masonry, would be a novel feature for England. No particular difficulty is seen in fitting them to the scene, but, if doubts arise, similar dams in Switzerland or Austria could be visited. One dam is recommended for the larger and wider East Lyn valley, and two in the West Lyn valley. These two would overlap to some extent so that the lower lake formed a cushion for material passing over the upper dam. For selected parts of the valley sides, temporary supports of masonry and rough timber should be provided at slips.

Concluding the report, Mr. Dobbie stresses the importance of the appearance of the works in relation to visible safety and to the beauty of their setting.

"SPLIT CONTRACTS"

Works Department Criticised

ALLEGATIONS that the Socialist-controlled Birkenhead Corporation works department were attempting to sub-divide contracts in order to keep work done by the department within the agreed limit of £400 were made at the last meeting of the Town Council by Conservative speakers.

Criticising a proposal that the department should paint the market hall, ALDERMAN L. GRIFFITHS DAVIES said he feared the proposal was the start of a new policy, and that the time was coming when contracts would be subdivided (as had been done in separating the painting from the necessary scaffolding work) to keep within the £400 limit. The Socialists were trying to force other contractors away and make the works department a monopoly, and that was a "despicable trick." It was only a matter of time, he said, before the department became the greatest scandal in Birkenhead since the last works department, which lost £34,000.

ALDERMAN DAWSON, in reply, said he saw no reason why conditions that obtained in other departments of the Corporation should not be shared by manual workers, and the ratepayers would benefit. So far as the scaffolding work was concerned, that was being done by specialist firms.

COUNCILLOR OATS, chairman of the works department, said the department was going to face up to private enterprise, pay its way, and be a saving to the ratepayers.

LIVERPOOL COLLEGE OF ART

Presentation of Painting and Decorating Awards

STUDENTS of the decorating and painting department of the Liverpool College of Art, at their annual prize-distribution, recently, received five out of seven awards presented by the North-Western Region of the National Federation of Master Painters, together with certificates and awards from the National Federation.

COUNCILLOR J. W. BROWN, chairman of the Liverpool Education Major Establishments Management Committee, who presented the awards, said the College of Art's trade classes, as a result of the foresight of people in the past, now led the country in many respects. He added that there was a harmonious relationship between students, employers and the education authority, and the success of that relationship was indicated by the numbers of students joining the department.

Mr. H. Johnson (National Society of Painters) and Mr. T. F. Cardwell (president of the North-West Region of the Federation of Master Painters) also spoke; the meeting was presided over by Mr. N. Bell.

Winners of the North-West Region awards included C. R. Bridgewater, A. T. York, W. A. Rose, R. J. Plumpton, and E. L. Kendall. In the examinations of the National Joint Education Committee (painting and decorating section) diplomas of merit were secured by R. J. Plumpton and D. E. Jones, while the J. W. Barker Scholarship was won by R. J. Plumpton.

IN PARLIAMENT

Rent Restriction

ON December 10, VISCOUNT BUCKMASTER called attention to the need for the revision of the Rent Restriction Acts if the effect of the housing programme was not to be offset by the loss of houses which became uninhabitable through the lack of the necessary repairs. He moved for papers. He said that at the present moment there were 4m. houses controlled at rents going back to 1914 or earlier, plus the increase permitted in those cases. The total of 4m. represented not only half of the controlled houses in the country, it represented one-third of the total houses. That might shed some light on the magnitude of the problem. The houses controlled by the 1939 Act were controlled at the levels obtaining at September, 1939. He did not think it had been suggested that at that time, with the clouds of war hanging over the country, rents were unduly high. What had happened since then? To what extent had building costs risen?

The best information he could get was taken from *The Builder* of February this year. There they were told that, taking the index figure as 100 in 1939, the comparable figure was now over 300. He accepted, and all those who gave thought to the matter must surely accept, that there should be a control of rents in times of housing shortage. But he could not accept the proposition that rents should be controlled at a level which made it utterly impossible for an owner to keep his house habitable. From such a situation, unfortunate consequences must flow. The first was, of course, that the moment the owner secured vacant possession, he would sell. That, in itself, might not sound a harmful thing, but it meant that, had he been given some slight added inducement, had normal conditions prevailed, he might have been prepared to let the house.

All parties were agreed that it was vital to preserve the supply of houses for letting, but, as things were, unless steps were taken, apart from council houses the supply of houses to let must certainly diminish. Then there was the tenant who sold, subject to the rent-restricted tenancy. He sold, if he was able to sell at all, at a sacrificial price. All too often such a property was bought by those who were not over-scrupulous. Their first action was to split the property into furnished rooms, with the minimum of furniture, and to sub-let it for the highest rent for which the unhappy tenant could be squeezed. They were guilty of the very rapacity and extortion which all responsible owners of property must condemn. It was true that in such a case the tenant could go to the rent tribunal, but it was also true that there were powerful deterrents—he had no wish to quarrel with his landlord; possibly he feared that he might lose possession as a result.

Then there was the unfortunate man who clung tenaciously to his property, the man who had held on too long or had not executed the repairs, and who was now unable to sell it. In such a case the Housing Act of 1936 gave the local authority power to serve notices requiring the repairs to be done. But, far from achieving their purpose, such notices accelerated the owner's intention to divest himself of his property. It was a sad thought that before the war those notices were comparatively easy to enforce, and there was very little need for them. Now, there was very great need for them, but they could not be enforced. The cruelty involved was far too great, and landlords were compelled, all too often, to resist them.

Had their lordships considered the situation of a man who was ordered to spend a great deal of money on a house which had already involved him in much loss, and which he would be prepared to put in order if he could live therein himself? Yet he was denied the right of access to it and ordered to spend still further money on it.

Speaking of the attempt which had been made to introduce legislation, he said it was no use giving a tenant security of tenure if the roof fell about his head. It might be possible to consider the problem from three aspects—running repairs, major repairs, and reconditioning. In regard to running repairs—the every-day repairs—there should not be too great a difficulty. Some increase on a percentage basis could be imposed, or one based on a formula such as that of the Royal Institution of Chartered Surveyors, which used the statutory deduction for taxation, which was the difference between the gross and net values, as part of the basis of their formula. He would stipulate that some increase on those lines should be tied to an obligation to execute repairs. It should not be beyond the wit of man to devise some procedure whereby no increase was payable to the landlord unless the house were in a proper state of repair. When they turned to major repairs, they were in a considerable difficulty, for the cost of necessity was great. The Housing Act of 1949 provided for loans for major repairs. Unfortunately, advantage did not seem to have been taken of the Act. It might be that the tenant could not afford the interest charges involved. It might be that his house was already mortgaged. Be that as it might, it seemed unfortunate that something along those lines could not be done. Indeed, it might be that the Act provided a framework which, if expanded and suitably altered, would form the basis from which might be executed the task in mind.

Allowances for Improvements

When they turned to reconditioning, which could not be divorced from improvement, the Rent Restriction Acts offered some help, because they provided an allowance of eight per cent. of the value of the improvements done. Even so, many landlords did not feel able to spend money on improving their property. Moreover, the eight per cent. was a gross figure. Here again, it might be that the Housing Acts, which provided, in this case, actual grants instead of loans, might be capable of being shaped to provide the solution sought for.

LORD LLOYD, Joint Under-Secretary, Home Office, said that there was no doubt that the most satisfactory long-term method of tackling the question of rent restriction would be to abolish it; and the only way to abolish it was to build so many houses that in the end it became unnecessary, for rent restriction was caused by scarcity. It had been suggested that 200,000 houses were going out of use every year because of disrepair, but his own calculations did not support that. But in the view of the Government there were a great many houses in occupation at present which they would be only too glad to see fall into disuse if there were anywhere they could put the tenants.

LORD SILKIN said that until the nation had a proper supply of houses fit for habitation, rent restriction must continue. At the present rate of building it would take a generation before those figures were obtained. He believed that we were reaching the summit of the high cost of repairs; he thought the tendency in the future might be for those costs to come down.

Concerted action was needed. Unless a non-party approach was agreed, he could well understand that the Government might be reluctant to introduce measures for increasing rents, even for repairs, and still more for dealing comprehensively with a problem which was going to be with them for more than a generation. He proposed that there should be a full inquiry with a view to putting forward, if possible, agreed proposals. The inquiry should be in two parts. The first part, on which there should be a report within three months, should deal with the subject of houses which were becoming uninhabitable through inadequacy of rent. The second part should report on the long-term question of rent restriction. He would lay down in advance, in order to secure general agreement, that if any increase of rent was recommended as a result of the first part of the inquiry, such an increase should be clearly and definitely connected with the provision of necessary repairs by the landlord, and should be for no other purpose than to meet the increased cost to him of repairs since 1939, and there should be no increased rent where the owner was already getting an adequate return on his outlay. This was a national problem. Our housing constituted a large part of our national wealth. He estimated the present-day value of our rent-controlled dwellings at some £2,250m. to £2,500m. That was a lot of money. Apart from the human suffering caused by bad housing, we could not afford to waste this great inheritance. Yet, if nothing was done—and done quickly—Britain would become largely a land of slums. He was sure that the patriotism, good will, courage, and good sense of all concerned would find a satisfactory solution.

LORD MORRISON said the facts were that the main parties were almost evenly matched, but that certain problems required urgent legislation, one of them being housing. Unless these problems were lifted out of party politics they would bring this Government down, and the next Government. The Labour Party executive were giving special consideration to the problem. He hoped that the Government and the Opposition would publish their conclusions as soon as possible for the benefit of the public, because the public were becoming impatient. The matter should be lifted out of the arena of party politics. Their lordships' House should form a working party to consider, as a matter of urgency, ways in which houses becoming uninhabitable through lack of repairs could be maintained, and to seek all-party agreement to the necessary legislation.

THE LORD CHANCELLOR promised that consideration would be given to every point that had been raised. The suggestion of a working party would be taken up by the Leader of the House. This was an enormous problem and he looked beyond the landlord and tenant. There was a wider vision of a time when every man could look forward to a comfortable home for himself and his family, and slums would be eliminated. That had been the policy of the Conservative Party since the first great Housing Act of 1890, and it was their policy to-day. It was common ground that there must be some measure of control. But the suggestion that every house should be subject to a separate assessment by some tribunal was administratively impossible.

The difficulty in which the Socialist Government found themselves was that they kept their eyes only on the aspect of the poor tenant, ignoring the position of the landlords. It was dangerous to stop short like that. The present Government would look at both sides of the question.

The idea which seemed to have found favour in the House was that any increase in rent in favour of the landlord must be tied up with an obligation to repair, although there were in the slums of our great cities some properties on which it would be a pity to spend money and materials. He promised special consideration to Lord Silkin's proposal that there should be an inquiry divided into two parts—one urgent and one long-term. That linked up with Lord Morrison's proposals. Some action must be taken to help landlords by way of an increase of rent, or by way of loans or grants, to prevent houses falling into disrepair and being lost as national assets.

VISCOUNT BUCKMASTER, in withdrawing his motion, described the reply as innocuous, and urged the Government to be more stout-hearted.

The motion was, by leave, withdrawn.

Rent Restriction Acts

On December 2 MR. ARTHUR LEWIS asked the Minister of Housing and Local Government if he would introduce legislation to review the Rent Restriction Acts.

MR. MACMILLAN said he had this matter under consideration.

Unemployed Workers

On December 4, in reply to MR. GIBSON, SIR WALTER MONCKTON, Minister of Labour, gave the following figures showing the numbers of males whose last employment was in the building industry registered as unemployed in Great Britain at the undermentioned dates:—

	Dec. 10, 1951	*Oct.* 13, 1952
Carpenters and Joiners	977	887
Bricklayers	373	348
Masons	38	37
Slaters and Tilers	99	102
Plasterers, etc.	332	241
Painters and Decorators	6,295	4,355
Plumbers, Gas Fitters, etc. ...	266	422
Glaziers	23	36
All other occupations, mainly labourers	12,556	19,142
Total	20,959	25,570

The Imperial Institute

In the House of Lords on December 9, VISCOUNT FALMOUTH drew attention to the report of the committee of inquiry into the Imperial Institute, presided over by Lord Tweedsmuir. He asked whether the Government would consider removing the Institute to a more suitable central site and set those buildings free for use by the Imperial College of Science and Technology, or, failing this, whether they would appoint an independent committee to investigate the present uses to which the educational sites in South Kensington were now put, or were proposed to be put.

In the debate which followed, LORD HAILEY said that no change could be made until the Government could find the Institute new and suitable buildings and had made financial provision for its future in new quarters.

LORD TWEEDSMUIR, the chairman of the committee of inquiry, said the Committee felt that the Institute had a great part to play, but if it was not possible to carry out the drastic reorganisation suggested, it should be closed down.

EARL DE LA WARR, Postmaster-General, said that, while he could not say the Institute would be removed to another site, he could give an assurance that this could not even be considered until the whole matter had been thoroughly discussed.

Private Building Licences

On December 9, MR. STEWARD asked the Minister of Housing and Local Government how many local authorities were carrying out the policy laid down by his Department by issuing licences for private building of houses up to the limit of their powers; and how many were not.

MR. GOWER asked how many local authorities were now issuing the maximum permitted proportion of private house-building licences; how many were not doing so; and how many local authorities were still granting no private licences for the erection of houses.

MR. MARPLES, who replied, said that the Minister had no complete information; although he was aware that there were variations of practice among local authorities.

Laundry Facilities

On December 9, MR. ELLIS SMITH asked the Minister of Housing and Local Government if he would permit electric washing machines, drying and laundry facilities to be provided by local authorities in all industrial areas where large numbers of women were engaged in industry; and if he would allow buildings to be built or converted so that adequate washing, drying and laundry facilities could be provided by local authorities on housing estates and in other cases within a reasonable radius of where large numbers of people lived.

MR. MARPLES, who replied, said that he was willing to consider reasonable proposals from local authorities where the existing facilities were inadequate.

DEVON AND CORNWALL ARCHITECTURAL SOCIETY

Annual Dinner

THE annual dinner of the Devon and Cornwall Architectural Society, held at Plymouth this year, was a great success and well attended. Mr. Howard Robertson, P.R.I.B.A., and Mrs. Robertson were present and other guests included City dignitaries, quantity surveyors, auctioneers and builders.

Speeches deplored the invasion by outside architects in the rebuilding of the City, not only for multiple and insurance concerns but for local traders. The local president, Mr. Lionel Vanstone, L.R.I.B.A., suggested that prospective developers would do well to employ local architects.

Mr. Howard Robertson suggested a competition among local architects for a much needed theatre.

Alderman Sir Clifford Tozer, J.P., regretted the great loss not only to the Society but to the City, of two honorary members, Sir Harold Harmsworth and Lord Astor.

Mr. John Bennett, the Society's treasurer, presented Mr. Lionel Vanstone with an inscribed silver tray in recognition of his work as editor of the Society's annual journal.

The year 1953 was forecast as one of greater freedom to build.

L.C.C. REVIEW RENTS

Increases Recommended

AT their meeting on Tuesday, the London County Council had before them recommendations of the housing committee to increase the net rents of dwellings built since 1919 (about 140,000 out of the total 150,000 L.C.C. dwellings) which are not subject to the Rent Restriction Acts, with the exception of some of the more recently developed post-war estates where rents are comparatively high, by 1s. to 3s. 6d. a week, as from January 26 next.

It is proposed to maintain an average overall increase of about 2s. 6d. a week, and thus to relieve the housing account of about £900,000 a year, equal to about half of the estimated supplemental rate contribution. In addition to the other half of the supplemental rate contribution, rents will continue to be subsidised to the extent of £900,000 by the statutory rate contribution as well as by the Exchequer subsidy.

The proposals mean that the average cost of a council dwelling (24s. 2d. a week, including supervision and management, repairs and renewals and debt charges) would be met by the net rent averaging 15s. 3d., Exchequer subsidy 4s. 10d., statutory rate contribution 2s. 2d., and supplemental rate contribution 1s. 11d. On an average there would thus remain a total charge on public funds of 8s. 11d. a week—equal to over half of the net rent in respect of each dwelling.

The main considerations which have weighed with the committee in recommending the rent increase are: (1) Increased building costs; (2) the increase in the annual costs of repairs and renewals from £6 per dwelling in 1938-39 to £17 in 1952-53 and a further expected increase; (3) the depletion of accumulated reserves in the repairs and renewals fund; and (4) the increase in the annual cost of management and supervision of estates from £2 a dwelling in 1937-38 to £6 10s. in 1952-53 and the expectation that this cost will continue to rise.

The committee have also, it is stated, been influenced by the heavy fall since the war in the proportion that the average rent of the Council's dwellings bears to the average weekly earnings, as shown in the Ministry of Labour Gazette, of adult males. While such earnings have risen from 69s. at March 31, 1939, to 173s. 7d. at March 31, 1952, the average net rent of L.C.C. dwellings has risen from 10s. 2d. to 12s. a week, over the same period.

Holland House

The Council also had before them a recommendation from the town planning and parks committee for the expenditure of £15,000 to preserve the fabric of the arcades and centre piece of the south front and the ground floor of the east wing of Holland House, Kensington, which with its grounds was handed over to the Council last June.

Prefabrication "Justified"

In a review of the Council's action in placing direct orders with a single firm (Hills (West Bromwich), Ltd.) for prefabricated components in connection with the erection of 18 primary schools in the 1950, 1951 and 1952 programmes, with the object of saving time in erection, the education committee reports that "the results have justified the method adopted," both in regard to costs and in time saved.

L.M.B.A.

President's Christmas Message

IN a Christmas and New Year message to his Area chairmen, which he has asked them to pass on to their members, the president of the London Master Builders' Association, Mr. D. E. WOODBINE PARISH, says:

The important part which the building industry has to play in the well-being of the country cannot be over emphasised, and I am sure that you and all your members appreciate the vital need to maintain the industry at the highest level of efficiency.

The position with regard to apprentices still gives cause for concern, and I am confident that members of your Area will continue to do their utmost to improve the present intake by every possible means.

The L.M.B.A. in its eightieth year has, by the introduction of its Educational Awards Scheme and Medal presentations, done much to re-establish a feeling of responsibility towards, and a pride in, our great industry and I hope that in Coronation Year we shall see a great many new entrants to the industry. We must welcome them and train them to a high standard of service. This should be our constant aim and purpose.

Duke's Portrait by Building Apprentice

THE DUKE OF EDINBURGH has accepted a pencil portrait of himself drawn by Mr. P. P. Trevillion, of Tottenham, one of the apprentices who attended the presentation of the L.M.B.A. Medals in the Mansion House last month.

Mr. Trevillion made notes for his sketch during the presentation of the medals by the Duke. When he had completed it he sent it to the L.M.B.A., who in turn forwarded it to Buckingham Palace. He has now received the following letter from the Duke's secretary:

> The Duke of Edinburgh has just received the splendid sketch which you have made of him, together with your letter. His Royal Highness considered it a very good piece of work and has asked me to thank you for your kind thought in sending it to him.

Mr. Trevillion is apprenticed to Laszlo Hoenig, of South Audley-street, and is doing a course of training as painter and decorator at the Tottenham Technical College.

More Apprentices Wanted

IN SENDING to L.M.B.A. members an illustrated souvenir of the presentation of the first L.M.B.A. Medals by the Duke of Edinburgh in the Mansion House last month, the president, MR. D. E. WOODBINE PARISH, gives a forcible reminder of "our responsibilities as master builders to provide for the future well-being of the industry by apprenticeship."

"The ceremony in the Mansion House," he writes, "was a memorable event, but it was never intended to be just that alone. It was arranged to encourage a new approach to craft apprenticeship and to recall old traditions and emphasise the future needs of our great industry.

"The recruitment and training of the craftsman of the future is our inescapable duty. It is for us as master builders to ensure that the craft strength of the industry is maintained. To do this we require, in London, at least 4,000 new entrants into the various crafts each year. At present fewer than 1,000 apprentices are being indentured annually. If every member were to take one apprentice more than he has at present the position would soon begin to right itself."

SMALL HOUSES LICENCE FREE

Mr. Macmillan's Announcement

IN the House of Commons, on Tuesday, Mr. Macmillan announced that owing to the success of the Government's housing policy, it had been possible to arrange that from January 1, 1953, it was intended to allow any individual to build houses subject to planning permission and byelaws consent, so long as the house was not larger than 1,000 square feet and did not consume more than the appropriate quantity of softwood timber. Subject to those conditions, builders could build up to 12 houses at a time. Local authorities were being asked to issue licences automatically on application.

Handbooks Still Available

The L.M.B.A. still has a number of current Handbooks available, and it is suggested that people might like to send them as "Christmas cards." Obtainable from the secretary, at 47, Bedford-square, W.C.1, the price is 7s. 6d.

FESTIVAL FOOTBRIDGE

Conclusions from the Test

REFERRING to the tests that took place last year on the Festival footbridge in a paper on "Development and Research on Prestressed Concrete Continuous Structures," which was read at the Institution of Civil Engineers on December 12, Mr. Y. Guyon said that they led to an essential conclusion, namely that when one span was loaded and the neighbourhood spans were unloaded, the continuity of the loaded span with its neighbours was suppressed.

"In other words," he said, "no attention need be paid to the negative moments in the unloaded spans in the rupture phase, and to obtain a given factor of safety it is sufficient to design each span for the loads and moments to which it is subjected.

"Needless to say, account must be taken of the end fixing moments when calculating the rupture moment of the span. If the resulting arrangement of cables, whilst suitable for resisting positive moments at mid-span, means too little resistance against negative moments, this may have an effect in the elastic phase but will have none at rupture. The worst that could happen would be a premature hinging at the centre of a non-loaded span, which would not lead to any diminution of the strength of the loaded spans.

"In other words, at rupture we are no longer concerned with variations of moments as in the plastic phase, but solely with the largest absolute value of the moments. Thus continuity brings to prestressed concrete the evident advantages which it brings to other methods of construction without losing the advantages of prestressing itself."

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BUILDING MATERIALS AND EXPORT MARKETS

Building Exhibition's Enterprise

RECOGNISING the need in the national interest to develop new export markets, the organisers of the Building Exhibition are planning special facilities for the display of building plant, equipment and materials suitable for the export markets at the next Exhibition, to be held at Olympia from November 18 to December 2 next. Advice will be available on the spot for those who wish to export and for those visitors from abroad who require information. There may be a special section for new developments suitable for Commonwealth and foreign markets, and intensive efforts are in hand for bringing foreign buyers to the Exhibition—the 25th of a series of which the first was held in 1895. The Duke of Edinburgh has accepted patronage of this silver jubilee display.

At a Press conference on December 15, at which Sir Lancelot Keay presided, MR. TOM BROCKIE, of the Exports Division, Ministry of Works, drew attention to the vast expansion in annual value of building materials exports which had risen from £7¼m. in 1938 to an anticipated figure of £62m. in 1952. Cement was largely responsible for this, but in recent years new markets had developed, particularly in the export of prefabricated buildings for use as schools, hospitals, houses, etc., to Australia, New Zealand and, more recently, to Canada.

MR. CAPLIN, of the Board of Trade, emphasised the need to find new export lines to replace the more usual ones; a rapid expansion in building equipment and materials could largely help to redress the balance caused by difficulties in other directions. The Commonwealth, he said, could be the most important field for such exports.

MRS. M. MONTGOMERY (director, the Building Exhibition) said that the Exhibition authorities were anxious to give intending exporters every help; there was no intention to export at the expense of the home market, but export we must if the country was to pay its way. Present indications were that the 1953 Exhibition would be a record.

Details of proposals may be had from the offices of the Building Exhibition, 4, Vernon-place, W.C.1.

G

"USING BRICKS TO BEST ADVANTAGE"

Local Authorities' Help Sought

MR. HAROLD MACMILLAN, Minister of Housing and Local Government, suggests in a circular to local authorities that they can themselves do much to see that the housing programme is not delayed by shortage of bricks.

The Minister asks them to co-operate to the full in following the recommendations in the circular so that the maximum amount of house-building is obtained in 1953 and 1954.

"It has become plain that in some areas there is a lengthening delay in meeting brick orders," the circular states. "The Minister of Works is doing all he can to increase brick production; in addition to emphasising to the industry the urgent need for greater production, he is helping to improve supplies of extra machinery, equipment and labour."

Two ways in which local authorities can assist are by ensuring that bricks are used to the best advantage, and by making full use of locally produced bricks, the circular points out. It reminds local authorities of the recommendations of a Ministry of Works economy *memorandum on bricks which was sent to them recently, and says: "The Minister expects local authorities, especially in areas where bricks are already difficult or are likely to become so, to instruct their architects to incorporate in their houses as many as possible of the savings and substitutions recommended in the memorandum. This should apply as far as practicable to houses already approved as well as to schemes in preparation. Cement supplies in some areas may limit the extent to which substitution is possible; this should be considered in the light of the relative local supply position of the two materials."

On the subject of local bricks, the circular says: "The makers of fletton bricks are already working to capacity. But in some areas local bricks can be supplied quickly and in these areas local authorities are strongly advised not to rely on meeting their requirements in bricks from outside, but to instruct their architects to use local supplies as much as possible. In the Minister's view it is better to complete houses quickly by using local bricks even if these cost more, than to risk the expense of having houses under construction held up for want of bricks."

NORTH-WEST FEDERATION

Opening of New Headquarters

THE North-Western Federation of Building Trades Employers recently acquired certain land and buildings in St. Mary's Parsonage, Manchester, which have been adapted and modernised to provide the Federation, for the first time in it history, with its own premises, comprising council chamber, committee room and suite of offices. The formal opening ceremony was performed on December 5 by Mr. Wilfred Horsfall, the president-elect of the National Federation of Building Trades Employers.

A luncheon, prior to the official opening ceremony, was attended by 140 members of the Council, representing 40 local associations. The president, Mr. Percy Riley, of Burnley, was in the chair, and the distinguished guests included Mr. Wilfred Horsfall; The Rt. Worshipful the Lord Mayor of Manchester (Alderman Douglas Gosling, O.B.E., J.P.); the regional directors of the Ministry of Works and the Ministry of Housing and Local Government (Mr. W. D. Marshall, C.B.E., and Mr. P. L. Hughes, O.B.E.); Mr. H. M. Fairhurst, M.A., A.R.I.B.A. (Architect), and the regional chairman and regional secretary of the N.F.B.T.O. (Mr. P. Haslam, M.B.E., J.P., and Mr. S. V. May).

THE LORD MAYOR proclaimed his faith in the future of the building industry, and hoped that the day was not far distant when the industry would achieve complete freedom from restrictive controls to enable it to get on with its job.

Reaching Housing Target

MR. WILFRED HORSFALL pointed out that in the last few months there had been some relaxation of controls. Building licensing had been eased, the Town and Country Planning Act was in the process of being amended so as to remove some of the inequities of that Act, and the timber position had also improved to some extent. It would be the objective of the Federation to speed up these processes as soon as possible. On the subject of houses, Mr. Horsfall said that the recently published housing figures showed that the building industry had not been slow to take advantage of the encouragement given to it by the Government to speed up the rate of house-building. This encouragement was on the right lines, and was in the direction long advocated by the Federation. If it continued during 1953 and we got better supplies of materials, there was no reason why the tempo should not increase sufficiently to enable the target of 300,000 houses a year to be reached.

He congratulated the North-Western Federation on its acquisition of new headquarters, and wished the Federation well in its future work.

*The memorandum referred to is No. 3 in the new series of Ministry of Works Economy Memoranda, "Using Bricks to the Best Advantage," H.M.S.O., price 2d.

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M.O.W. WINTER LECTURES

January Programme

THE programme of Ministry of Works discussion lectures for January is as follows :

January 6.—"New Timbers and Their Uses," by J. R. Aaron. The Holborn Restaurant, Wellington-road, Rhyl. 7 p.m.

January 7.—The same lecture at the Council chambers, The Town Hall, Llandudno. 7.0 p.m.

January 8.—The same lecture at the Lecture Room, Institute Building, Caernarvon. 7.0 p.m.

January 8.—"Good Practice in Plumbing," by F. N. Shimmin. The College of Further Education, Accrington. 7.15 p.m.

January 8.—"Techniques and Devices for Improving Bricklaying Output," by C. S. Thompson. East Ham Technical College, Department of Building, Arragon-road, E.6. 7.30 p.m.

January 13.—"Concrete Placing and Formwork," by L. J. Murdock. Y.M.C.A., Connaught Hall, Blackett-street, Newcastle upon Tyne. 7.0 p.m.

January 13.—"Painting Traditional Buildings," by T. A. Baker. M.O.W. Building, Ashley-street, Birmingham. 7.15 p.m.

January 13.—"Problems of Plastering and Rendering," by E. L. E. Westbrook. Bournemouth Municipal College, Building Department, Shelley Park, Boscombe. 7.15 p.m.

January 14.—"Soil Mechanics in the Building Industry," by A. L. Little. College of Technology, Byrom-street, Liverpool. 7.15 p.m.

January 14.—"Structural Uses of Timber," by S. Woolf. Technical College, Galashiels. 7.15 p.m.

January 14.—"Small Heating and Ventilating Installations," by A. M. Palmer. Medway Technical College, High-street, Chatham. 7.0 p.m.

January 14.—"Good Practice in Domestic Drainage," by F. J. Crabb. Police Assembly Room, Shakespeare-street, Nottingham. 7.15 p.m.

January 15.—"Apprenticeship," by Sir George Gater. Technical College, Bolton. 7.15 p.m.

January 15.—"A History of Road Construction," by Percy Parr. Technical College, The Green, Sunderland. 7.0 p.m.

January 15.—"Advantages of Thermal Insulation of Building Structures," by E. W. Herrington. Technical College, Cole-street, Scunthorpe. 7.15 p.m.

January 15.—"Essentials of Good Concreting," by E. H. MacMillen. Schofield Technical College, Park-road, Mexborough. 7.15 p.m.

January 15.—"Structural Uses of Timber," by S. Woolf. Gas Showrooms, Demonstration Hall, Greenock (entrance in 205, Dalrymple-street). 7.15 p.m.

January 19.—"Cement and Concrete," by Philip Gooding. Technical College, Bolton. 7.15 p.m.

January 20.—"Colour in Industry," by J. M. McEwing. Technical College, Bolton. 7.15 p.m.

January 21.—"Developments in the Use of Timber in Building," by F. D. Silvester. Technical College, Bolton. 7.15 p.m.

January 20.—"Housing—What Next?" by G. Grenfell Baines. Technical College, Northgate, Darlington. 7.0 p.m.

January 20.—"Recent Developments in Building Plant," by A. MacNiven-Brown. Robert Gordon's College, Aberdeen. 7.15 p.m.

January 20.—"The Thermal Insulation of Buildings," by C. S. Goyder. South Dorset Technical College, Newstead-road, Weymouth. 7.15 p.m.

January 21.—"Painting Traditional Buildings," by T. A. Baker. Colleges of Art and Technology, The Newarke, Leicester. 7.15 p.m.

January 21.—"Advantages of Thermal Insulation of Building Structures," by E. W. Herrington. Main Hall, South-East London Technical Institute, Lewisham Way, S.E.4. 7.30 p.m.

January 21.—"Recent Developments in Building Plant," by A. MacNiven-Brown. School of Economics, Bell-street, Dundee. 7.15 p.m.

January 21.—"A Debate on Old and New Methods of Building." Technical College, Couldon-place, Stoke-on-Trent. 7.15 p.m.

January 22.—"New Timbers and Their Uses," by H. Richardson. School of Building, Erith-road, Belvedere, Erith, Kent. 7.30 p.m.

January 22.—"Sewerage Schemes for Small Groups of Houses," by John Dossor. Technical College, 159, Tadcaster-road, York. 7.15 p.m.

January 26.—"Prestressed Concrete," by F. Walley. Croydon Polytechnic, Selhurst-road, South Norwood, S.E.25. 7.30 p.m.

January 26.—"Structural Uses of Timber," by J. R. M. Poole. Wandsworth Technical Institute, Wandsworth High-street, S.W.18. 7.30 p.m.

January 27.—"Working Rule Agreements," by Stanley May. Technical College, Lancaster. 7.15 p.m.

January 27.—"Good Practice in Plumbing," by G. Lloyd Ackers. Congregational Church Hall, 89, Broad-street, Reading. 7.15 p.m.

January 27.—"Essentials of Good Concreting," by

E. H. MacMillen. Technical College, Church-street, Barnsley. 7.15 p.m.

January 28.—"Waste Plumbing Fundamentals," by F. N. Shimmin. Technical College, Manor Croft, Burton-on-Trent. 7.15 p.m.

January 28.—"Essentials of Good Concreting," by S. White. Kirby Girls' Secondary Grammar School, Roman-road, Middlesbrough. 7.0 p.m.

January 28.—"Heating and Heat Insulation," by G. D. Nash. College of Art, Green-lane, Derby. 7.15 p.m.

January 28.—"Advantages of Thermal Insulation of Building Structures," by J. C. Knight. Twickenham Technical College, Egerton-road, Twickenham. 7.30 p.m.

January 28.—"Small Heating and Ventilating Installations," by A. M. Palmer. College of Technology, Salmon Pastures, Sheffield. 7.15 p.m.

January 28.—"British Standards and Codes of Practice for Building," by C. Roland Woods. Council-chambers, Police-buildings, St. Brycedale-road, Kirkcaldy. 7.15 p.m.

January 28.—"Thermoplastic Tiling," by F. L. Brady. Guildford House, High-street, Guildford. 7.0 p.m.

January 29.—"British Standards and Codes of Practice for Building," by C. Roland Woods. Lesser Town Hall, Motherwell. 7.15 p.m.

SAWN SOFTWOOD

Prices in the First Half of 1952

ACCORDING to the latest number of "Timber Statistics for Europe," quarterly bulletin published by the Secretariats of the Economic Commission for Europe and of the Food and Agriculture Organisation, export prices of sawn softwood either remained unchanged or showed only slight decline during the first quarter of 1952, particularly those of the goods produced by the major Scandinavian sawmills. It was not until May that a general fall in prices occurred following the offer of some 3,000 standards of good commodities and specifications by a major north Finnish sawmill at £70 per std. f.o.b. for 7 in. u/s redwood battens. Prices then fell continuously until July, when the bottom level seems to have been reached around £60-£64 per std. f.o.b., and well-known south Swedish goods were sold at as low a price as £70 per std. c.i.f. United Kingdom. The increased demand in July, however, which continued throughout August, resulted in somewhat higher prices, which appear to have settled around £67-£70 per std. f.o.b., lesser qualities being sold at £62-£65 per std. f.o.b.

Prices of small-sized industrial roundwood, after their fall by some 25 per cent. at the beginning of 1952, remained practically unchanged—i.e. around $14-15 per stere f.o.b. for half-barked spruce pulpwood and around 600s. per fathom f.o.b. for pitprops.

TOWN PLANNING DECISION

Appeal on Colour of House Roof Upheld

AFTER an interval of some two months, during which his new house has stood roofless and exposed to wind, rain and frost, Dr. Bernard Richardson, of the Wilderness, Harbottle, Northumberland, has been informed by his architect, Mr. T. J. Cahill, F.R.I.B.A., of Alnwick, that the Minister of Housing and Local Government has allowed his appeal against a ruling of the Rothbury R.D.C. that the roof of the house must be blue, and that he can now proceed to construct the red roof for which he asked.

Until the Inspector's report had been considered, and a decision reached, the house had had to remain without a roof at all, and at its November meeting the local council sent an urgent letter to Whitehall asking for a decision one way or the other as the delay was likely to cause damage to the partly built house in view of the oncoming winter weather.

CENTRAL LAND BOARD

Powers of Purchase

A STATEMENT just issued by the Central Land Board says:—The Town and Country Planning Bill, 1952, now before Parliament, proposes among other things that development charge shall be abolished for development begun on or after November 18, 1952 (the date the Bill was introduced), and that the Board shall cease to acquire land under section 43 of the Town and Country Planning Act, 1947, and section 40 of the corresponding Scottish Act, except where before November 18 a notice to treat has been served in respect of a compulsory purchase order already made by the Board or a contract has been entered into by the Board for purchase of the land by agreement.

During the period until the decision of Parliament on the terms of the Bill is known, the Board do not propose to consider any new acquisitions of land under the Acts.

National Park

Mr. Harold Macmillan, Minister of Housing and Local Government, has confirmed with modifications the North Yorks Moors National Park (Designation) Order. The effect of the modifications in the boundary is to reduce the area of the park from about 600 sq. miles to about 553 sq. miles. The confirming order is being sent to the National Parks Commission, who will deposit copies of the order and map in the offices of the local authorities affected as soon as possible.

INQUIRY BUREAU

Settlement Cracks

Q.—I am supervising an extension to my own private house, which is a two-storey, modern dwelling built of hand-made facings. I am anxious to avoid the possibility of settlement cracks occurring where old and new work is bonded together. The sub-soil is clay, and I am wondering what precautions you consider might be taken in the construction to avoid such cracks occurring.

F. R. C.

A.—A technical correspondent writes: From experience it is quite impossible to give any assurance that an extension built on to an existing building will not settle or crack where the new work joins the old. The new portion will inevitably settle unequally to the old, which may also be settling because of weather conditions, especially if on clay. However, the following suggestions may help to lessen the risk of settlement and cracking.

Special attention should be given to the excavation, and also to the bearing properties of the clay, as well as the width and thickness to carry the load. It might be advisable to put the extension on a series of short piles with a beam attached which would form the foundations. The quality of the concrete, which can be reinforced with mild steel rods if desirable, as well as the question of expansion or movement at the point of contact with the existing foundations, must be taken into consideration. The usual method of toothing and bonding each course is not advised as it is better to use the method of block bonding. The block bonding is usually four courses each block, and should go into the old work for the entire thickness of the wall and be bonded in at least 4½ in. Every course should be efficiently grouted with mortar.

These safeguards will reduce the chances of settlement or cracking, but buildings on clay are particularly subject to movement, especially if the foundations are not well below ground level.

G. W. H.

Overhanging Trees

Q.—I am interested in an estate on which there are several poplar trees. Some are on the extreme boundary, and leaves falling in autumn get into the rain-water gutters of the adjoining houses. A few also have branches overhanging the boundary. Have I any responsibility to adjoining owners?

T. J. H.

A.—A legal correspondent writes: You have no responsibility in regard to the leaves. With regard to the overhanging branches, the position is that the adjoining owners, if these branches can be regarded by them as a nuisance (*i.e.*, something adversely affecting their enjoyment and use of their property) can request the owner to cut back the branches, or themselves cut them back, so as to abate the nuisance. They may do this even without notice to the owner of the trees, unneighbourly as it may seem. If the owner does the cutting, he must not go on the adjoining owner's land to do so without obtaining permission, otherwise he would be committing a trespass.

Builders' Foremen's Course

A course on site and office organisation and welfare designed for foremen in the building industry will commence early in the New Year at Erith Technical College's Department of Building, Erith-road, Belvedere, Kent, provided there are sufficient applicants.

NEWS IN BRIEF

L.C.C. Development Plan Inquiry

Objections relating to Lewisham and Greenwich will begin to be heard at 10.15 a.m. on January 5 at the inquiry into objections to the development plan for the County of London.

Self-Help Housing Associations

To encourage self-help housing associations, the L.C.C. has been recommended, in a joint report by the finance and housing committees, to extend the maximum period for the repayment of loans from 20 to 30 years.

Express Carriers' Gazetteer

The Express Carriers Group of the Road Haulage Association, 146, New Bond-street, W.1, has issued a Gazetteer of members. For the purpose of the Gazetteer, the country is divided into ten areas with an alphabetical index of towns in each area. Names, addresses and telephone numbers are given, together with details of districts served and storage available. Copies can be obtained from the Secretary at the above address.

Builders Congratulated

Builders in the Coseley area have been congratulated on their co-operation and speed by the Coseley Council. The council has sent a letter to the contractors who have built 102 houses in the district, expressing satisfaction at the way the contract has been carried out, and the speed with which building has gone forward. The Council especially asks that its thanks be conveyed to the workmen.

A Retirement

On December 31 Mr. James Denver, M.B.E., retires after completing nearly 52 years with the Manchester, Salford and District Building Trades Employers' Association (actually since its inception), for 41 years of which he has been secretary. He will be succeeded by Mr. Martin V. Bates. His many friends in the North and elsewhere congratulate Mr. Denver on a wonderful record and will wish him a happy and long period of retirement.

Design Competition

The Council of Industrial Design and the Corporation of Birmingham, in an attempt to foster a high standard of design in outdoor seats, have arranged a competition for manufacturers, who are invited to send in prototypes or mock-ups of their new designs by April 30, 1953. Seats for any purpose are eligible, and competitors may use any materials and any appropriate methods of construction. The sponsors will award diplomas for designs that reach a sufficiently high standard, and will show all entries at a public exhibition in London. Entries, which should be sent under a pseudonym, will be judged by a panel consisting of principal officers of the Council of Industrial Design and the Corporation of Birmingham, together with an architect, a landscape architect and an assistant editor of an architectural journal. A meeting between competitors and judges will take place at the exhibition after the awards have been made but before the anonymity of entries is broken. At this meeting competitors may challenge the judges to explain the reasons for their decisions. The competition has been organised by the Council's Street Furniture Committee, Tilbury House, Petty France, S.W.1.

L.M.B.A. Staff Party

The president and officers of the L.M.B.A. entertained the staff to a Christmas party on Tuesday. It began with dinner at the Café Royal, at which Mr. D. E. Woodbine Parish presided, and ended with a visit to "Paris to Piccadilly," the Folies Bergère, at the Prince of Wales' Theatre.

The "Building Encyclopaedia"

Mr. S. G. Blaxland Stubbs, M.B.E., has retired from the Waverley Book Company as their General Technical Editor, and has been succeeded by Lt. Col. R. A. Baynton, T.D., B.Sc. (Eng.)., A.C.G.I., A.M.I.E.E, Among the productions for which Mr. Blaxland Stubbs was responsible was the "Building Encyclopaedia," now in its fourth edition.

Forest Products Research, 1951

Industrialists are now seeking advice from the Forest Products Research Laboratory before new projects are started and not only on difficulties which have already arisen in their work, says the Report of the Forest Products Research Board for 1951, which was published recently. The Report interprets this tendency as showing that the practical value of scientific information to industry is now becoming widely realised in the timber and associated industries. Advisory work and the investigation of the properties and uses of the new tropical timbers which are being imported into this country were the principal activities of the Laboratory during the year, but it has also continued its work on wood structures and timber mechanics and on such allied subjects as seasoning, the properties of composite woods, machining research, mycology and entomology. A new structures testing laboratory capable of testing full scale industrial type trusses and other structures was completed and brought into use during 1951.

PERSONAL COLUMN

SOUTHERN FORGE, LTD., of Langley, Bucks, one of the Almin group of companies, announce that MR. L. E. YOUNG, sales manager, has been appointed a director of the company.

THE DIRECTORS of John Wright and Sons (Veneers), Ltd., announce the appointment to their Board of MR. R. N. SMITH and MR. J. C. MCINTOSH. The former will retain his duties as works manager, and Mr. McIntosh will continue in the capacity of sales manager of the decorative veneers department. MR. W. J. O. JENKINS continues as sales director of the overall activities of the company.

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By CAIN (V. C. Abell)

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OFFICIAL NOTIFICATIONS

Free Trading in Zinc

THE Ministry of Materials has announced that it has now completed its discussions with the trade on arrangements for the release of zinc from its stocks during the first seven months of private trading after January 1, 1953. The Ministry has agreed to sell back to the agents of the United Kingdom and other Commonwealth producers 24,000 tons of zinc of their own brands. This metal will be available for immediate delivery as required throughout the first half of next year. Adequate supplies will therefore be available to meet consumers' requirements. No other zinc from the Ministry's stock will be placed on the market during this period, except for sales by the Government broker on the London Metal Exchange for prompt delivery when no other prompt supplies are available.

Pricing of the 24,000 tons of zinc will be on the basis of the monthly average London Metal Exchange quotation over the six months from February to July, 1953, at the rate of 4,000 tons per month.

Appointment of Government Broker

The Ministry of Materials has also announced that, after consultation with the committee of the London Metal Exchange, the Minister has appointed Mr. F. C. Chisnell, managing director of Anglo Metal, Ltd., to act as Government broker for all sales of zinc by the Ministry on the London Metal Exchange.

Copper and Copper Alloys

The Board of Trade announce that orders have now been made revoking the Copper and Zinc Prohibited Uses (Board of Trade) Order, 1951, as amended, and the Copper and Zinc Prohibited Uses (Ministry of Supply) Order, 1951, as amended. The effect will be to remove restrictions which have been in operation since early in 1951, on the use of copper, brass and other copper alloys in manufactures for the home market.

SUMMER HOLIDAYS

Date Fixed for Birmingham Area

THE Birmingham local joint committee for the building industry has decided that the fixed week for the holiday to be taken in 1953 under the holidays with pay scheme shall be the normal working week commencing June 29, and terminating July 4.

The area covered by the committee includes the whole of the area of the City of Birmingham and a five miles' radius from Stephenson-place (excluding any portion of the Borough of West Bromwich), the County Borough of Smethwick, the Municipal Borough of Oldbury, portions of the Municipal Borough of Rowley Regis, and the whole of the Urban District of Solihull.

TRADE NEWS

Change of 'Phone Number

Mr. S. Silverman, timber merchant, 215-219, Brick-lane, Bethnal Green, E.2, has changed his telephone number to Bishopsgate 0808.

Waltham Cross School

In connection with the advertisement of Vitreflex, Ltd., which appeared in our issue of December 5 and referred to the enamelled rainwater goods supplied by this firm for the Primary Church School, Waltham Cross, an error occurred in the wording of part of the advertisement. The last line should have read, "No increased initial cost."

OVERSEAS BUILDING

[From Our Own Correspondents]

Australia. — General Motors-Holden, makers of the Australian "people's car," have announced a £A11m. expansion programme, which should offer some scope for British suppliers. The plan will add a million square feet of floor space to this firm's plants in Sydney, Melbourne and Adelaide, giving it a total floor area of 81 acres. At Fishermen's Bend, Victoria, buildings will be increased from 833,322 sq. ft. floorage to 1,118,672 sq. ft. A mechanised foundry there will be doubled in size, and the programme will include a new 133,000 sq. ft. manufacturing plant. This will house a training centre, plant services, and an additional canteen to seat 800. At Woodville, South Australia, the body-building and metal-stamping plant is being increased to give a total floor area of 1,546,740 sq. ft. At Pagewood, New South Wales, the floor area of the vehicle assembly and Frigidaire refrigerator manufacturing divisions will be increased from 283,000 to 447,745 sq. ft. The programme is scheduled for completion by the end of 1953, and so far about £A5m. of the estimated £A11m. has been spent. . . . Victoria's Director of Decentralised Industrial Development (Sir Norman Martin) reports that decentralised projects costing £A60m will be undertaken in that State within the next few years. These include new development by Ford Motors at Geelong (£A4,750,000); British Celanese Co., Geelong (£A10m.); H. J. Heinz Co., food processors, Dandenong (£A3m.); Kirkstall Repco, Moorabbin, and Dunlop Rubber, Bayswater (£A1m.). Holloway Bros. (London), engaged in widening the Elwood Canal, have acquired sites at Moorabbin to erect 100 houses, a construction depot, and a hostel for British workmen, pending completion of the houses.

**Australia.*—The Geelong Harbour Trust Commissioners have issued a call for tenders for the construction of a refinery pier at Corio Bay, Geelong, Victoria. The closing date for the receipt of tenders is January 13 next, and tenders should be addressed to the Chief Engineer, Geelong Harbour Trust Commissioners, Engineer's Office, Geelong. A copy of the specifications is available for inspection by representatives of U.K. firms at Room 6168, Commercial Relations and Export Department, Board of Trade, Horse Guards-avenue, London, S.W.1. Telephone inquiries to Trafalgar 8855, Ext. 2418.

Brazil.—The port of Rio de Janeiro is to be extended. Four additional piers are to be built and the quays are to be extended by 10,450 metres. Two harbours are to be built at Macapa in the territory of Amapa, and at Forno to serve the proposed new alkali factory to be built near Cabo Frio.

Cuba.—Cuba is to support a National Theatre. Definite plans are now in hand for the construction of this theatre in Havana. The architects appointed to supervise the construction are Messrs. Arroyo y Menendez, Arquitectos, Calle 72, Miramar, Havana, who should be approached direct regarding supplying of building materials. As far as interior furnishings and equipment are concerned, details of offers should be addressed to Senora Elena de Arcos, Senora Presidenta, Patronato del Teatro Nacional, Calle 19, numero 451, equ. A. F. Vedado, Havana.

*From the Board of Trade Special Register Information Service.

Egypt.—The construction of a D.D.T. factory in Egypt is at present being discussed by Egyptian building officials and the World Health Organisation. A site has already been chosen at Kafr-el-Zayat and there is information to the effect that an Egyptian company is to be formed to operate the factory. About £2m. is to be spent on drinking-water projects all over Egypt. Shepheards Hotel, which suffered in the recent riots, is considering rebuilding plans.

Holland.—A new Moerdyk Bridge is to be built to replace the existing bridge which spans the Hollands Deep between Dordrecht and the province of North Brabant. The old bridge, which was damaged during the war, has a single line track and is just over 4,500 ft. long. The new bridge is to carry a double track.

Israel.—A copper refinery plant is to be built at Elath in Israel because of the large deposits of this mineral near by. Building of the refinery's first unit is scheduled to begin in three or four months and should be completed towards the end of 1953. . . . The Director-General of the U.N. Technical Assistance Administration has signed agreements on technical assistance for Israel. This will eventually mean erection of industrial plants to cope with the many offers from manufacturers who wish to produce in that country. In Nathanya a zone has been set aside for 25 additional diamond-cutting plants. A large brewery, the National Brewery, Ltd., is just under construction, and negotiations are nearing completion for the setting up of a large plastics factory. Development areas for workers' houses have also been set aside so that housing can keep pace with industrial building.

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The SCOTTISH BUILDER

Plewland House

THE uncertainty of the future of Plewland House, South Queensferry, which is a good example of traditional Scottish domestic architecture, has now been settled. The thanks are due to The Pilgrim Trust, who have made a generous offer of £4,000 towards the cost of restoring the house, and the National Trust, who are to take over the house and restore it for housing accommodation at a cost of £1,500. A public appeal is to be launched to raise the sum. The architects for the restoration are Messrs. Basil Spence and Partners, Edinburgh.

Perth Rents Increase

THE RENTS of all Perth County Council houses built since 1940, except those at Scone, Aberfoyle and Invergowrie, are to go up by 25 per cent. as from February 16. The increases range from £4 10s. on a two-apartment flat, bringing the rent up to £22 10s., to £8 on a five-apartment cottage, making the new rent £40. The house rents at Scone, which are at present £4 more than the rents of houses elsewhere in the county, and at Invergowrie, will be rented at £4 more than the new rent charged for similar houses elsewhere in the county.

NEW BUILDINGS

Dunoon.—Plans in hand for new science and domestic science buildings at Public School. Plans by County Architect, County-chbrs., Cowal Hotel Offices, West Bay, Dunoon.

Glasgow.—Plans in hand for alterations and additions at The Rosevale Picture House, Dumbarton-rd., for which the architects are Charles MacNair, Elder and Ridley (A. & F.), 529, Sauchiehall-st., Kelvingrove, Glasgow.

Glasgow.—Plans to be prepared for a new public school (nursery) at Pendon-rd., for which the architect is John MacNab (F.), 129, Bath-st., Glasgow.

Glasgow.—Plans in the hands of their own staff architects for new buildings which are to be erected at Pollockshaws-rd. by The Strathendric Structures, Ltd., 411, Pollockshaws-rd., Glasgow.

Glasgow.—Plans to be prepared for alterations and additions at the Archdiocese of Glasgow Church Buildings at Balmore-rd., Possilpark, for which the architects are Reginald Fairlie and Partners (F. & A.), 7, Ainslie-pl., Edinburgh.

Glasgow.—Plans to be prepared for extensions and other works by their own staff of architects, which are to be carried out by The Machine Tool Corporation, Ltd., United Kingdom Insurance-bldgs., St. Vincent-st., Glasgow.

Greenock.—Corporation to erect at Broomhill Park a new pavilion est. to cost £3,000, for which plans are to be prepared, and another at Lady Octavia Park, for which the architect is Robert L. Rankine, A.M.Inst.C.E., A.M.T.P.I., Master of Works Office, Greenock.

Hamilton.—Corporation to erect 15 houses at Udstone, Millhouse. The architect is George Allison, Council-chbrs., The Cross, Hamilton.

Inverness.—Approval has been given to C.C. for the erection of 29 houses at Aviemore, at a cost of £54,905.

Inverness.—The Scottish Education Department have approved a plan to provide a new primary school at Hilton. The county architect has been asked to prepare plans of the first instalment.

Kirkcaldy.—Corporation to erect five eight-storey blocks of houses for which plans are to be prepared by their architect, Robert Meldrum, A.M.Inst.C.E., A.M.T.P.I., Municipal-chbrs., Kirkcaldy.

Lanark.—Corporation to erect 70 houses at The Kildare, and The Ryter Lodge housing sites. The architect is J. M. Whyte (F.), 38, High-st., Lanark.

Paisley.—Plans prepared for a new nursery school to be erected at Douglas-st. by Renfrewshire C.C., whose architect is Thomas Hepburn, Education Offices, Glasgow-rd., Paisley

Paisley.—Plans prepared for new suite of halls and complete offices which are to be erected at Rowan-st. for Lysel and Church.

Wigtownshire.—C.C. propose the erection of 112 houses at Sorbie, Portwilliam, Portpatrick, Glenluce, Garlieston, Dunragit, Castle Kennedy, Cairnryan, and Bishopton, at an est. cost of £194,000.

The Builder

FUTURE CONSTRUCTION

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

DECEMBER 22.

***†Chester City C.**—211 houses and flats on Blacon housing estate. City E. & S., Municipal Offices, 43, Northgate-st.

***†Hitchin U.D.C.**—58 houses on the Westmill estate. S. to the Council, Council Offices, Brand-st. Tenders by January 26.

DECEMBER 24.

***†Leeds Regional Hospital Board.**—Alterations to kitchens, St. Mary's Hospital, Green Hill-rd., Leeds, 12. Architect to Board, Park-par., Harrogate. Dep. £2 2s. Tenders by January 7.

DECEMBER 26.

***Glasgow Corpn.**—32 flats at Lamlash-cres., Cranhill. Director of Housing, 2nd Floor, 20, Trongate.

DECEMBER 29.

***†Gateshead C.B.**—Grammar school at Dryden-rd. H. J. Cock, Chief Architect. Dep. £5 5s. Tenders by January 26.

DECEMBER 30.

***Bletchley U.D.C.**—Factory, Denbigh-rd. J. F. Smithie, E. & S. Dep. £5.

***†Surrey C.C.**—Erection of eight new schools on various sites. County A., County Hall, Kingston-on-Thames.

DECEMBER 31.

***†Essex C.C.**—Kitchen and dining-room, Church fields school, Woodford. H. Conolly (F.), County A., Chelmsford.

***†Leeds Regional Hospital Board.**—Two nurses' hostels, Sutton Branch of Hull Infirmary, Sutton-on-Hull. Architect to the Board, Park-par., Harrogate. Dep. £2 2s. Tenders by January 19.

JANUARY 1.

***Richmond (Surrey).**—R.C. secondary school for Trustees of R.C. Diocese of Southwark. H. S. Goodhart-Rendel and Partners (FF.), Kirkland House, Whitehall, S.W.1.

***†Surrey C.C.**—Classrooms at five schools. County A., Kingston-on-Thames.

***†Surrey C.C.**—Single-storey buildings at three schools. County A., Kingston-on-Thames.

JANUARY 2.

***†Hampstead B.C.**—18 flats, 5 lock-up shops and 17 garages at Dennington Park-rd. and West End-la. T.C., Town Hall, Haverstock Hill, N.W.3.

***Reigate Boro'.**—53 houses, Green-lane estate. B.E. & S. Dep. £4 4s.

JANUARY 3.

***†Lincoln (Kesteven) C.C.**—Conversion of disused casual wards, St. George's, Stamford. J. W. H. Barnes (F.), County A., Sleaford. Tenders by January 26.

***†Lincoln (Kesteven) E.C.**—Classrooms, North Kyme county school. J. W. H. Barnes (F.), County A., Sleaford. Tenders by January 26.

***†Lincoln (Kesteven) E.C.**—Various trades, new boarding house block, King's School, Grantham. J. W. H. Barnes (F.), County Architect, Sleaford. Tenders by January 26.

JANUARY 5.

***†Bury St. Edmunds B.C.**—40 houses at Baldwin-ave., Mildenhall-rd. estate. B.E. & S., Borough Offices. Dep. £2 2s.

***†Eastbourne C.B.**—48 houses, Langney Village estate. B.S., 2, Saffrons-rd. Dep. £2 2s. Tenders by February 6.

***†Epping U.D.C.**—37 houses at Beaconsfield estate. Clerk to the Council, Council Offices, 91, High-st. Dep. £2 2s. Tenders by February 7.

***†Lincoln (Kesteven) E.C.**—Classrooms and offices, Bourne County secondary modern school and North Hykeham C. of E. school. J. W. H. Barnes (F.), County A., Sleaford. Tenders by January 26.

JANUARY 8.

Bacup B.C.—Type 2 houses within the borough, up to a maximum of 50. B.E., Municipal Offices, Stubbylee Hall. Dep. £2 2s.

JANUARY 10.

***Brighton B.C.**—Alterations to Heron's Court, London-rd. B.E. & S., 26-30, King's-rd. Dep. £2 2s.

JANUARY 12.

***Chester R.D.C.**—22 houses at Saughall. T. Eaton, A.R.I.B.A., 16, White Friars. Dep. £3 3s.

JANUARY 14.

***Welwyn R.D.C.**—Eight houses, Burnham Green. S. Dep. £2 2s.

JANUARY 17.

***Ely U.D.C.**—14 houses at Steward-close, Stuntney. E. & S., Urban Council Offices, Lynn-rd. Dep. £1 1s.

***Lincoln (Kesteven) C.C.**—House, Thurlby estate. R. F. Barton, County Land Agent, Sleaford.

JANUARY 20.

***Barrow-in-Furness C.B.** — Proposed Walney County nursery school, Amphitrite-st., Walney Island. J. N. Flitcroft, B.E. & S. Dep. £2 2s.

JANUARY 23.

***†York City C.**—Restoration of the Guildhall, City A., 8, St. Leonard's-pl.

JANUARY 28.

***Seaton U.D.C.**—39 houses, 6 flats and one shop with maisonette over at Elizabeth-rd. A. Lamb (A.), 2, Prospect-pl., Ottery St. Mary, Devon. Dep. £3 3s.

FEBRUARY 4.

***Oxfordshire C.C.**—School, Ambrosden-rd. school, Marston. County A., 3, Becket-st., Oxford.

FEBRUARY 16.

***Waltham Holy Cross U.D.C.**—37 houses at Paternoster Hill estate, Upshire. Council's S. Dep. £2.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

JANUARY 5.

***Ellesmere Port U.D.**—50 prefabricated lock-up garages within the district. E. & S., Sub-office, Queen-st. Dep. £1 1s.

ROADS, SEWERAGE AND WATER WORKS

JANUARY 9.

***Southend-on-Sea C.B.**—Installation of new drainage system, Municipal College chemistry laboratories. Boro' A. Dep. £1.

GENERAL BUILDING WORK

(LONDON)

Deptford. — School. — A scheme prepared by Gollins, Melvin & Ptners. (A./F./A.), 21, Russell-sq., W.C.1, for erection of two new buildings at Samuel Pepys county secondary school has received L.C.C. Ed. Com.'s approval. Est. cost is £135,152.

Fulham.—Clearance.—L.C.C. are recommended to declare the Aintree-st. area a clearance area, and to acquire, clear and partly redevelop it at an est. cost of £36,000.

Hackney. — Acquisition. — Compulsory purchase order by B.C. of Cazenove-rd. site for housing purposes has been confirmed by M.H. and L.G.

Islington.—School.—Scheme for the erection of the first stage of Highbury Quadrant county primary school has been prepared by L.C.C. Schools A. and approved by L.C.C. Ed. Com. Est. cost, £102,533.

Lewisham.—Flats and Houses.—Proposals have been made by L.C.C. Hsg. Com. for erection under direct labour of 42 flats and 188 houses at Downham estate and Avondale-rd. site, at est. cost of £471,323. Scheme was prepared by L.C.C. Hsg. Architect.

Lewisham.—Housing.—Proposals have been made by Boro' A. to build 15 houses and 24 flats at Winn-rd. and Corona-rd.; 3 bungalows, 12 houses and 12 maisonettes at Creeland-gr.; 15 dwellings in Shornsdean-st., Engleheart-rd. and Sportsbank-st.; 8 houses and 117 houses and maisonettes at Lawn-ter., Lee-ter. and The Glebe; and 18 dwellings at Hither Green-la. and Ladywell Park. Council approval has been given.

Lewisham.—Houses.—Erection by Clark and Ptnrs., builders, 167, Lee High-rd., S.E.13, of two houses in Taunton-rd. has been approved by B.C.

Lewisham.—Dwellings.—Proposed erection by Dunsmore Brothers, architects, Survey House, Brockley-rise, S.E.23, of two houses in Brockley-view has received B.C. approval.

London.—School.—L.C.C. Ed. Com. have approved a scheme for the erection of a new county primary school at a site fronting Carleton-rd. and Dalmeny-rd., Tufnell Park, at est. cost of £80,660. Buildings will provide nine classrooms, stores, a general-purpose room, assembly hall and servery, staff accommodation and a school-keeper's house. Scheme was prepared by L.C.C.

Morden.—Houses.—Erection of eight houses by direct labour at Morden Tavern grounds, St. Helier estate, is proposed by L.C.C., at a cost of £13,378. Scheme is being prepared by L.C.C. Hsg. A.

St. Marylebone.—School.—Approval has been given by L.C.C. Ed. Com. to a scheme for erection of Quinton school and its county complement on a site between Finchley-rd. and Marlborough Hill. Architect for the schools, est. cost £450,793, is Edward D. Mills, F., 16, Carlisle-st., Soho-square, W.1.

Southgate. — Nursery. — Recommendations have been made to Middx. C.C. to submit for Ministry approval proposals for a £30,000 residential nursery at Camden House site.

South Kensington.—School.—L.C.C. Ed. Com. have approved a scheme prepared by Chamberlin, Powell and Bon (formerly Brown and Chamberlin), architects, 15, Sydney-mews, Fulham-rd., S.W.3.

Southwark.—School.—L.C.C. Ed. Com. propose erection of an assembly hall and kitchen-dining room at Robert Browning primary school at total est. cost of £12,257. Architect is G. Fairweather, F., 28-30, Wigmore-st., W.1.

Southwark.—Redevelopment.—L.C.C. Hsg. Com. propose to acquire, clear and redevelop Ripley-st. areas at a cost of £40,000.

Stepney.—Clearance.—(C1) The acquisition, clearance and partial redevelopment of the Barnardo-st. areas has been recommended by L.C.C. Hsg. Com. Est. cost £45,700.

Tottenham.—Offices.—M.O.W. propose to erect an employment exchange and offices for the Ministry of National Insurance at the Scotland Green site.

Wandsworth.—Flats.—Plans have been prepared by Dawney & Carpenter (L/L.), 131, Victoria-st., S.W.1, for erection of nine flats on West Hill extension, as part of the future development of the site, at est. total cost £22,700.

Wandsworth.—Redevelopment.—L.C.C. Hsg. Com. propose the acquisition, clearance and partial redevelopment of No. 4, Lytton-grove, Wandsworth, at cost of £8,500.

(PROVINCIAL)

Almondbury. — C. of E. authorities propose to build new parish church, St. Michael's, to serve the Fernside estate. Architect will be G. Row, Huddersfield.

Aveley.—Approval has been given by L.C.C. Hsg. Com. to a scheme for a major shopping centre on the Aveley site, comprising 48 shops, 53 maisonettes, 26 stores and 36 garages. Scheme, which was prepared by L.C.C. Hsg. A., is est. to cost £338,000. They also propose standard unit factory at the site at an est. cost of £30,000.

Bedale.—H. B. Richardson, 3, Skinnergate, Darlington, has prepared plans for six houses at Kirklington, for R.D.C. No contracts let.

Birkenhead.—Williams and Sons (Builders), Ltd., are to erect six houses in Egerton Park; C. H. Leftwich and Co. to build two houses in Holt-rd.; and Joseph Rimmer & Son 10 houses on the Durley estate.

Bosley.—Restoration is proposed at St. Mary's Church.

Brierley Hill.—T.C. propose purchase and adaptation of Hollydene, Pensnett, as a community centre.

Broadstairs.—B.C. have approved the erection of 12 houses in Lindenthorpe-rd. by Hazel and Potts, Albion-rd.; and the erection of 10 houses and one bungalow in Dalmeny-close by Mrs. A. Benn, Rubislaw, Bishop's-ave., Finchley, London, N.2.

Carlisle.—City Council is to let contract for police section office at Harraby to plans by City E., 18, Fisher-st.

Chester-le-Street.—Marshall & Tweedy, 36, Blackett-st., Newcastle-on-Tyne, have prepared plans for converting shop into bank for Newcastle Savings Bank.

Consett.—U.D.C. has approved a plan by County Planning Officer for aged persons' hostel in Medomsley-rd.—R.C. authorities propose church on Moorside estate.

Cumberland.—C.C. propose erection of rural-type police stations at Hallbankgate, Low Crosby and Thursby.

Cumberland.—C.C. is to erect nurses' house with surgery and waiting-room at Frizington to plans by County A., Portland-sq., Carlisle.

Darlington.—T.C. to let contracts for 186 houses in groups of about 10, 30, 40 and 106. Plans by Boro' A., Central-bldgs., Darlington.

Droitwich.—Holt Brewery Co., Ltd., propose erection of a hotel at Stalls Farm estate.

Durham.—Buildings and the miners' hostel at Annfield Plain are to be converted into a domestic science and handicraft centre and dining hall. County A., G. K. Clayton, Court-la., Durham.

Durham.—City E. is to prepare plans for flats, and shops with flats above, on the Sunderland-rd. estate.—C.C. is to rebuild the Middleton-in-Teasdale fire station. County A. is G. R. Clayton, Court-la., Durham.—C.C. is to convert Cellar Hill House, Newbottle, into occupation centre. Plans by County A., Court-la. Durham.

Eston (Yorks).—U.D.C. intends erecting during next four years 806 houses. Layout plans by Surveyor, N. C. Harrison.—E. J. Hinge's Cinemas, Ltd., Newcastle-on-Tyne, are to carry out restoration work on the fire-damaged Majestic Cinema at South Bank-on-Tees.—U.D.C. has been informed that cost of repairs to bridge over Normanby branch line will be £15,000, and North Riding C.C. is to be asked to accept responsibility for the work.

Gateshead.—T.C. is to erect four police houses in Harle-st., two in Split Crow-rd., six in Old Durham rd., and eight in South Hill-rd. Corpn.'s Chief A. is H. J. Cook, Municipal-bldgs.—T.C. plans erection of 150 "Dorran" and 100 "Orlit" houses and also traditional houses on 38 acres of land at Blackhill Hill, Heworth. R. G. Tarran & Son have been asked to tender for the "Dorran" houses. H. J. Cook is Chief A. and B.E. is A. J. MacGregor.—E.C.'s building programme includes Hill Head Secondary School to cost £132,600, and Leam-la. County Infants' School to cost £54,000. Chief A., H. J. Cook, has been instructed to prepare plans for the former.—Marshall and Tweedy, Grainger House, Blackett-st., Newcastle-on-Tyne, are architects for alterations to business premises of Kemps Stores, Rothbury-gdns.

Hebburn-on-Tyne.—U.D.C. is to erect 260 houses on the Monkton-la. housing estate. These will include 24 flats and 36 old people's houses. Surveyor is R. C. Bestow, Council offices, Hebburn.

Honiton.—R.D.C. propose to erect four houses at Smeathorpe, six houses at Offwell and six houses at Plymtree.

Liverpool.—Hsg. Com. have instructed City A. and Director of Housing to prepare working drawings for ten-storey block of 120 flats at Sparrow Hall estate, Fazakerley.

Newbiggin (Northumberland).—W. Dixon & Son, 1, Collingwood-st., Newcastle-on-Tyne, have prepared plans on behalf of the National Coal Board for erecting bathrooms in 111 colliery houses at Newbiggin.

Newcastle-on-Tyne. — Children's Comm. intends buying "Clifton Mount," Grainger Park-rd., for use as a home for deprived children.

Newcastle-on-Tyne.—Murray and Charlton, motor salesmen, are to provide new showrooms in Northumberland-rd. A. is E. M. Lawson, Barras-bldgs., Barras Bridge, Newcastle.—N.C.B. is to provide new offices at 1-5, Ferth-la. Plans by N.C.B., Ashfield, Benton-rd., Gosforth.—Bell & Son, builders, 7, Northumberland-pl., are to build five houses in Swaldale-gdns. and one in Lindisfarne-rd.

Newport.—U.D.C. to prepare draft plans for 10 bungalows at Long Meadow site.

Northallerton.—North Riding E.C. has appointed J. H. Napper, 56, Eldon-pl., Newcastle-on-Tyne, architect for the proposed Northallerton County Primary School.—E.C. is to invite tenders for proposed Eston Grammar School. County School A. is D. W. Dickenson, County Hall, Northallerton.

North Riding.—C.C. is to provide a large new library at Catterick Camp. County A., J. Catchpole, County Hall, Northallerton.

Northumberland.—Following representations by E.C., M. of E. has agreed to include Killingworth Grammar School No. 1 in next year's building programme. Provisional cost is £114,000. County A., C. C. Brown, County Hall, Newcastle-on-Tyne.

Northumberland.—Plans for 100 miners' houses at Shilbottle have been prepared by Reavell & Cahill, Lloyds Bank-chbrs., Alnwick.

Oldbury.—Repertory Players seek licences for conversion of Spring-st. Chapel as a new theatre.

Oxford.—City C. are recommended to ask Ministry consent for a loan of £42,641 to construct 12 flats and 15 houses on N.W. portion of Wood Farm estate.

Rotherham.—T.C. approved plans for laboratory at Whiston Grange for Birmingham Small Arms Co., Ltd.; internal alterations at White Swan Hotel, Westgate, for Bentleys Old Brewery (Rotherham), Ltd.—T.C. propose kitchen and dining-room at Kimberworth Park primary school.

Runcorn.—Ministry approved erection of three additional classrooms at Grange County Infants' School.

St. Helens.—Liverpool Regional Hospital Board to prepare plans for reinstatement of building affected by subsidence at St. Helens Hospital.

St. Helens.—Hsg. Com. seeks loan sanction of £156,940 for 96 houses at Hard-la., and £105,410 for 80 houses on Ashton Green Farm section of Newton-rd. site.

Skelmersdale.—U.D.C. to prepare draft plans and specifications for five types of houses and two-storey flats.

Skelmersdale.—Brock's Crystal Palace Fireworks, Ltd., propose additional building.

South Shields.—B.E., John Reid, has prepared layout plan for 30 houses in Ravensworth-ter.—M. A. Mackenzie, 1, Eldon-sq., Newcastle-on-Tyne, has been appointed architect by T.C. for converting premises in Oakleigh-gdns. into hostel.—R.C. Diocese of Hexham are to erect R.C. Church, hall, and presbytery at Horsley Hill-sq.—Tenders are to be considered by T.C. for erection of 15 flats in Lawe-rd. Plans by B.E., Town Hall.

Stoke-on-Trent.—T.C. to adapt "Bulkeley Hall," Woore, as a home for aged.

Stokesley.—R.D.C. proposes converting "Manor House" into Council offices to plans by W. Burnie, Surveyor.

Sunderland.—Boro' A., H. C. Bishop, Grange House, Stockton-rd., Sunderland, has prepared plans for five shops and flats on the Farringdon estate.

Sunderland.—T.C. plans to erect 300 flats at Hendon and Boro' A., H. C. Bishop, Grange House, Stockton-rd., has been asked to prepare plans.—W. Pickersgill & Sons, are to erect machine sheds at West Shipyard, Southwick.—T. H. Rae, 5, Belford-ter., Sunderland, has been appointed quantity surveyor by T.C. for the erection of shops and flats at Castletown.—Hsg. Com. has reserved two acres of land on Pennywell estate for a permanent community centre. Boro' A., N. Bishop, Grange House, Stockton-rd., Sunderland.

Swansea.—Highways Com. have granted planning approval to Messrs. David Evans to erect a £125,000 store in Princess-way.

Tynemouth.—Tasker & Child, architects, Trinity-bldgs., New Bridge-st., Newcastle-on-Tyne, have prepared outline plans for erection of bungalows on sites 29-42, inclusive, on Ingleside estate.—T.C. has earmarked site in Penrith-ave., Marden, for a children's home.—A building licence is to be issued to Rev. Clucas for a new vicarage.

Warrington.—E.C. received M.E. approval for first instalment of a new college and a new girls' high school in 1953-4 programme.

Washington (Co. Durham).—Fennell & Co., Bridge End-chbrs., Chester-le-Street, have prepared plans for three houses for Durham County T.A. and A.F. Association.—Plans have been approved for ambulance stn. on the Hostel Estate, for Durham C.C., and canteen at Glebe Colliery, for Durham Coal Board.

Washington (Co. Durham).—U.D.C. is to erect aged people's houses in Oxford-ave.

Whickham (Co. Durham).—U.D.C. to consider tenders for erection of three lock-up shops, two flats and five maisonettes in Beech-dr., Dunston. Architects are Fennell & Co., Bridge End-chbrs., Chester-le-Street.

Whitley Bay.—U.D.C. approved plans by L. J. Couves & Partners, Carliol House, Newcastle-on-Tyne, for six houses at Deneholm, for T.A.

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Genuine ground English white lead ...	166	5	0
Genuine English white lead paint (1 gal)	2	19	0
Genuine refined English red lead ...	129	0	0
Genuine powdered English litharge ...	129	0	0
Genuine English flake and ground flake litharge	131	10	0
Genuine refined English orange lead...	141	0	0
Genuine refined English red lead in oil	156	0	0
Genuine English red lead Pt. BS.1011 type 1 (1 gal. tins)	2	15	6*
English red lead pt. BS.1011 type 2 (1 gal. tins)	2	4	0*

* With effect from December 3.

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TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government Departments*.

Aberdeen.—Erection of 136 houses on the Mastrick housing site, for Corporation. Alexander B. Gardner (F.), Architect, Housing Offices, Broad-st., The Castlegate, Aberdeen: *Alexander Hall & Son, Ltd., Aberdeen, £202,318.

Banbury.—Erection of 82 houses on the Neithrop housing estate, for B.C.: *Selleck, Nicholls & Co., Ltd., St. Austell, £107,380.

Bishop Auckland.—Erection of dining-hall and kitchen block at Bishop Auckland girls' gram. sch., for Durham County E.C. County A., G. R. Clayton, Court-la., Durham: *George Stephenson, Ltd., Chester-st., Bishop Auckland, £18,898.

Calne and Chippenham.—Erection of 10 houses and site works at Langley Burrell, for R.D.C. Architects, Edwards & Webster, A/A.R.I.B.A., A/A.M.T.P.I., 10, St. Mary-st., Chippenham, Wilts. Quantities by W. E. Underwood & Son, 21, Gay-st., Bath: *Pearce Bros., Kington Langley, Wiltshire, £14,773.

Chelsea.—The Elm Park-gdns. Conversion Scheme, which provides for the conversion of six houses into 16 2-bedroom and four 3-bedroom flats with a further flat in the basement for a resident porter.

John Garlick, Ltd.	£58,931
E. S. Priston & Son, Ltd.	56,984
White and Johnson, Ltd.	55,970
Y. J. Lovell & Son, Ltd.	55,291
Falkus Bros., Ltd.	55,224
J. P. Williams, Ltd.	54,174
‡R. Dixon & Sons	52,561

Darlington.—Erection of the proposed Hutton-ave. cty. prim. sch., for E.C. Borough A., E. A. Tornbohm, Central-bldgs., Darlington: *George Dougill & Sons, Chestnut-st., Darlington (loan sanction sought for £58,375).

Doncaster.—46 houses on Cantley estate, stage II (phase 2), for B.C. L. J. Tucker, Borough A., Southpar.

P. P. Taylor (Doncaster), Ltd.	£61,942
F. J. Flowitt (Building Contractors), Ltd.	59,014
*Pricing Committee of Small Builders Scheme, 201, Westminster-bldgs., High-st., Doncaster	55,419

Durham.—Additions to Castletown cty. sch., for Durham C.C. County A., G. R. Clayton, Court-la., Durham: *E. R. Willey, Victoria-rd., Washington, Co. Durham, £6,000.

Gateshead.—Adaptations at Kent House, Gateshead, for Inland Revenue Offices: *W. Jackson, 5, Audley-rd., Gosforth, Newcastle-on-Tyne.

Glasgow.—Erection of 24 flats for the aged at Ruchazie, for the Corporation. Archibald G. Jury (F.), architect, Housing offices, The Trongate, Glasgow: *Glasgow Corporation Direct Labour Department, £36,780.

Gt. Yarmouth.—34 dwellings at Magdalen College estate, Gorleston, for B.C. H. F. Dyson, M.B.E., M.I.Mun.E., Borough Engineer, Town Hall, Great Yarmouth. Quantities by P. Pank & Partners, 5, Queen-st., Great Yarmouth: *H. A. Holmes & Sons, Ltd., South Icehouse Hill, Gorleston.

Greenwich.—Erection of 24 flats on the Coldbath-st. housing site: *Henry Kent (Builders), Ltd., 51, Beacon-rd., Lewisham, S.E.13, £48,813.

Guildford.—13 blocks of "Duplex" houses and 7 pairs of houses, Bushey Hill, Merrow, for B.C. G. H. Causey, A.M.I.C.E., B.E. & S. Quantities by F. W. Norris, A.R.I.C.S. 7 pairs, *W. W. Harris, 141, Woodham-la., New Haw, Weybridge, £18,073. 13 blocks, *Purser & Co. (Hillingdon), Ltd., 43, Uxbridge-rd., Hillingdon, Middx., £46,239.

Hambledon.—Works, for R.D.C. R. F. Caple, A.M.Inst.C.E., M.I.Mun.E., E. & S.: 10 houses at Cranleigh, *Deeks & Steere, Ltd., Godalming, Surrey, £14,859; 10 houses at Cranleigh, *Godalming Building & Construction Co., Ltd., £14,484; 8 houses, 2 bungalows and 12 flats at Chiddingfold, *B. G. Merrison, Brundall, Churt, Surrey, £28,114; 18 houses at Whitley, *F. E. G. Brockway & Son, Mead-la., Farnham, Surrey, £24,567.

Hexham.—Extensions to engineer's stores at the post office, Hexham: *R. C. Williamson, Rowlands Gill, Co. Durham.

Lambeth.—Construction of eight dwellings on site No. 53, Rattray-rd.

M. J. Gleeson (Contractors), Ltd. ...	£15,600
Eason and Sutton, Ltd.	14,717
Jones and Feasey, Ltd.	13,890
H. T. Oliver & Sons, Ltd.	13,762
J. A. Dumayne & Co., Ltd.	13,090
Clarke, Barton & Co., Ltd.	12,959
Woodcock Bros. (Wimbledon), Ltd.	12,490
Cobby and May, Ltd.	12,376
F. T. Wooding & Sons, Ltd.	12,319
‡Linzells, Ltd. (revised figure)	12,203

Four dwellings on each of sites Nos. 55 and 56, Kay-rd.

M. J. Gleeson (Contractors), Ltd. ...	£16,620
Eason and Sutton, Ltd.	14,493
Jones and Feasey, Ltd.	13,960
H. T. Oliver & Sons, Ltd.	13,784
Clarke, Barton & Co., Ltd.	13,096
Woodcock Bros. (Wimbledon), Ltd.	12,449
Cobby and May, Ltd.	12,419

J. A. Dumayne & Co., Ltd.	12,404
Linzells, Ltd. (revised figure)	12,364
‡Wisby (Croydon), Ltd.	12,297

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Liverpool.—Erection of six flats at Shaw-st., for C.C.: ‡Hibberts (Builders), Ltd., £11,967.

L.C.C.—Carrying out repairs to the war-damaged lido at Hornfair:

Truett & Steel, Ltd., Thornton Heath ...	£28,933
W. H. Gaze & Son, Westminster	27,874
Greenaway & Son, Camberwell	20,998
Thomas & Edge, Ltd., Woolwich	20,934
Geo. Newton & Hill, Ltd., Southwark ...	20,875
R. Mansell, Ltd., Croydon	20,512
*J. & J. Dean, Ltd., Leyton	20,403

The preliminary estimate of the appointed architect in private practice (not based on quantities) is £18,300.

L.C.C.—Erection of Ring Cross primary school (Islington North).

Patman and Fotheringham, Ltd., Islington	£44,350
Thomas Bates & Son, Ltd., Romford ...	42,700
J. and J. Dean, Ltd., Leyton	41,540
Yeomans and Partners, Westminster ...	41,200
C. P. Roberts & Co., Ltd., Holborn	39,990
J. M. Hill & Sons, Ltd., Wembley	39,486
A. N. Coles (Contractors), Ltd., Paddington	38,011
*H. Fairweather & Co., Ltd., Muswell Hill...	37,573

The architect's comparable estimate is £37,890

¶London (M.O.W.).—Contracts placed by M.O.W. during week ended December 6. —

London: 35, Old Queen-st., S.W.1, internal decorations, Clark & Fenn, Ltd., 43, Lower Belgrave-st., S.W.1. *Dorsetshire*: Wimborne, erection of an abattoir, Lavender (McMillan, Ltd., 54, Cheam Common-rd., Worcester Park, Surrey. *Dumfriesshire*: Devils Beef Tub, Dumfries, erection of T.R.S., Alex. Schoolar & Son, Buccleuch-st., Moffat; Johnstone Bridge, erection of T.R.S., Alex. Schoolar & Son, Buccleuch-st., Moffat. *Essex*: Government-bldgs., Beeches-rd., Chelmsford, internal painting, Dyke Harrison, Navigation-rd., Chelmsford, Essex. *Hertfordshire*: Stevenage, erection of water pollution station, Harry Neal, Ltd., 117, Baker-st., London, W.1.

Lancashire: Heaton Moor, erection of telephone exchange extension, W. Thorpe & Son, Ltd., Chester-rd., Cornbrook, Manchester, 16; M/Food Slaughter House, Orford Green, Warrington, alterations and additions, Walter Peak, 17, Church-st., Warrington. *Middlesex*: Northolt-rd., South Harrow, extension of Byron T.E. and erection of garage and stores, Comben & Wakeling, Ltd., 603-5, Kenton-rd., Harrow, Middlesex. *Staffordshire*: P.O. Garage, Horseley Fields, Wolverhampton, erection of new workshops, etc., Jenks Builders, Ltd., Lr. Stafford-st. Works, Wolverhampton, Staffs. *Surrey*: Tillings (Smith Brook), Surrey, erection of telephone repeater station, type R4, Y. J. Lovell & Son, Ltd., Elm Hall, Ship-st., East Grinstead. *Yorkshire*: Leeds, erection of Moortown telephone exchange, Higgs & Hill, Ltd., 33, St. Paul's-st., Leeds, 1.

¶London (War Dept).—Works contracts placed by W.D. for week ended December 6: *Essex*: Building work, A. D. Jackson & Sons (Contractors), Ltd., Southend. *Nottinghamshire*: Miscellaneous, Fairclough & Foster, Ltd., Bootle. *Hampshire*: Miscellaneous, F. Box & Co., Ltd., Bournemouth. *Wiltshire*: Painting and decorating, F. Labbett & Sons, Nottingham; Painting and decorating, C. A. Hayes & Son (Painting), Ltd., Bristol. *Hampshire*: Painting and decorating, F. Labbett & Sons, Nottingham.

Newcastle.—Alterations and improvements to a block of offices in Market-st., Newcastle: *T. Clements & Sons, Selborne-gdns., Newcastle-on-Tyne.

Newcastle-on-Tyne.—Erection of police section station in Welbeck-rd., for City C. George Kenyon, City A., 18, Cloth Market, Newcastle: *A. Anderson (Contractors), Ltd., Stanmore-rd., Newcastle, £4,485.

Newcastle-on-Tyne.—Erection of 92 houses and 52 flats in "Unity" construction on the Copperas-la. estate, for City C.: *R. Bowey & Son, Back Raby-st., Newcastle-on-Tyne, £224,000.

North Riding.—Alterations to Stokesley ct. sch., Brotton C.E. sch., North and South Cowton cty. sch., and Kirby Hill C.E. sch., for E.C.: *W. Airey & Sons, Ltd., Leeds, £11,568.

Prestatyn.—20 houses at Maes Hendre, Meliden, for U.D.C. T. Grant, M.I.Mun.E., E. & S., Council Offices, Prestatyn, Flintshire: 6 houses: *R. Williams & Son, Monarfon, Palmeira-gdns., Prestatyn, £8,610; 7 houses: *H. L. Clayton, Elmwood, Fairview-ave., Prestatyn, £9,630; 7 houses: *Roberts & Jones, The Mines, Meliden, £9,630.

Richmond (Yorks).—Erection of 11 houses, for R.D.C.: *E. Black, Valley-st., North Darlington.

South Shields.—Erection of four shops and flats in Lake-ave., for T.C. John Reid, B.E.: *Robson Brothers (Contractors), Ltd., Dean-rd., South Shields, £14,485.

Stanley (Co. Durham).—Erection of Methodi church hall and Sunday sch. at East Stanley. Architect, J. Wilson Hays, Central-chbrs., Wingate, Co. Durham: *Coleman & Co., Church-st., Durham, £6,000.

Sunderland.—Erection of a shopping centre, comprising 23 shops on the Pennywell estate. Architects, L. H. Fewster and Partners, 22, Conduit-st., London, W.1: *Sir Robert McAlpine & Sons, Star-bldgs., Newcastle-on-Tyne.

Washington (Co. Durham).—Erection of 100 "No Fines" houses on the Heugh Hill site, for U.D.C. Surveyor, T. E. Crowe: *G. Wimpey & Co., Ltd., Orchard House, Newcastle-on-Tyne, £126,066.

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